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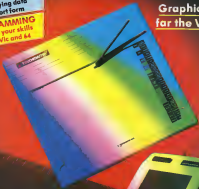
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## EDITORIAL

NEW MACHINES ALWAYS make their manufacturers nervous. A company may not fold  
 just because its new machine is a spectacular flop, but its image will be damaged and it will  
 be wide off its economic amount of effort, research and capital. A succession of  
 flops and the company will fold.

The rewards of launching a successful machine, however, are self-evident. Quite apart  
 from the immediate financial returns, there are numerous advantages in establishing a  
 user base and lowering brand awareness. A successful move may not be a license to  
 success, but it comes close.

The C16 and the Plus/4 have only been on the market for a few months, so it is perhaps  
 premature to make any final judgements. Nevertheless, it is possible to draw some  
 conclusions now.

Neither machine is a smash hit, though the C16 appears to be selling quite nicely. The  
 Plus/4, for all its built-in software, appears to be falling on stony ground. At the risk of  
 sweeping functions, the manuals are outweighing the prices.

This does not mean that either machine is doomed to an early scrap heap. The  
 Commodore 64 was not an instant success when it was first launched in the UK. It only took  
 off when Commodore reduced its price.

It is interesting to note that Commodore appears to be considering the idea of  
 concentrating on desktop which would make the Plus/4 compatible with the 64. This would  
 allow it to run software written for the 64, thus making a severely more attractive no-brain  
 software company and user.

However, with 40 and 50 pc machines already lowering on the horizon, neither the C16  
 nor the Plus/4 has been steadily selling fast. If these machines are going to be  
 successful, they will have to take off soon. Judgements may be postponed for the moment  
 but the day of reckoning is not that far off.



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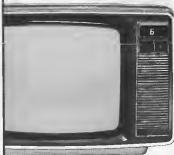
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This is a box of paints.



This is a piece of paper.

This is a  
paintbrush.



All it takes to use it is a little imagination. And an exciting new software program from CBS called *Pixstik*.

The *Pixstik* program instantly turns your TV into a blank piece of paper. And the *Pixstik* light pen at the screen and quicker than you can say "Where's Van Gogh?" you're on electronic canvas.

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*Pixstik*. Plug it in and let your imagination do the rest.



from



FOR COMMODORE 64



## LETTERS PAGE

### Terminal tips

HERE ARE a few more useful console codes for anyone who has Terminal's Super Chiller game.

When the game has loaded press **BLINK/STOP/RESET** only then type:

**SY54619** — makes the grid invisible

**SY54719** — to give infinite lives

**S Del**

**Speed/stop**

**Chiller**

### We goofed — twice

ON 11th December once you printed a program called Space Mines I typed the listing in and checked and amended minor errors. When I ran the game everything was OK until I pressed a key to start, and all that came on to the screen was "BREAK IN 3049". Could you please tell me what was wrong with the program?

Neil Quilty

Adelphi

B' Parky

YES — WE goofed! Space Mines is in two parts, and we only printed the first part, which gives the instructions for the game but not the game itself. You'll find the second half of Space Mines in this issue.

When on the subject of goofs, the listing for Steve Lee's last "Wreck" in the same issue and unmentioned graphic alterations. If you're having problems, replace the metal register, start fresh triangle and diamond with appropriate colour symbols, and the other graphics with colour metal symbols. You should then be able to check so many rules as you like without difficulty.

CON UP'S	****
CON DOWN'S	****
CON LEFTS	----
CON RIGHTS	****
HOME 1	CLR *
COLOURS	
BLK	7 OF 1 6
WHT	8 OF 1 6
RED	9 OF 1 6
CYN	4 OF 1 6
PUR	1 OF 1 6
GRN	2 OF 1 6
BLU	3 OF 1 6
YEL	5 OF 1 6

### Vic 20 forever

I HAVE bought every issue of your magazine since it started last year. I own a Vic 20 and have been very disappointed with November's cover since there is hardly anything for the Vic, there was only one game to type in, and that copied the Super Chiller.

Software reviews for the Vic were also scarce. I've always liked your magazine and now, so please have more for the Vic.

John Allen

Northampton

EVEN THROUGH the Vic has now been discontinued, as long as there is a demand for articles and a supply of new software from manufacturers, we will continue to support it, along with the 44, C16 and Plus-4. You'll notice that there are several new Vic games reviewed in the last two issues, and we'll continue to publish similar things as long as you continue reading them in.

### Vic 20 — never

WITH TMI's demise of the Vic 20 there may be a number of your readers who are considering the 44 as a replacement. Let me sound a note of caution.

My original configuration was the Vic 20, 1545 printer, Datacolor and 1540 disk drive. On enquiry with my supplier I was assured they were all compatible with the 44. The supplier gave me a word "OPEN" — removed it and sent the 1540 which was confirmed by CERN/Conley. Needless to say it did not work. Further enquiry to CERN gave me a couple of POKES which appeared to work until I attempted to load a device program. Yet another enquiry gave me the information that the POKES

would not work if there were any LOAD/SAVE in the programs, and the only way to ensure success was to change a chip in the 1540.

I loaded the 44 Tape Computing magazine cassette from the Datacolor and got a soft LOAD ERROR message. A brand loaded on the C16 and everything was perfect. This means I've spent £21.42 for a chip and £39.95 for a C16.

So, when a supplier tells you that peripherals are 44 compatible — they're not. C & H (Herts) Farnham.

LET'S JUST clear a few points up. There's no functional difference between the Datacolor and the C16, as the problem with the Datacolor was most probably caused by mislabeled heads or whatever. The 1540 and 1545 are, however, different, and the modification mentioned would be necessary to use the 1540 satisfactorily with the 44.

The moral of the tale is that suppliers can be more interested in selling products than in checking their facts. Always use the product working before heading over the coast.

Write to this chance to win your money — send your tips, complaints and compliments to Letters Page, Commodore Horizons, 12-13 Little Newport Street, London WC2E 8RN.



## NEWS DESK

# Tynesoft promises C16 games

SOFTWARE for the new Commodore 16 and Plus/4, available to clients at the time of writing, may soon be available from at least one major software company. Tynesoft has plans for a Christmas release of a starter pack of four C16 games, *Samurai*, *Combs*, *Munch* and *Hoppy*, at £14.95.

The four games are variants of well-known arcade games, and have been produced in co-operation with Commodore UK.

Tynesoft spokesman Colin Conway said: "The C16 is doing well locally, and we have plans for several more games. Despite the small numbers we're soon able to design *Black Sea* (C64) by Dundee, which has eight scrolling screens, and we're now working on *Olympiad* (C64) by Dundee, featuring several run-

COMMODORE is to sponsor the 1983 British Computer Society Schools' Computer Quiz. Sponsorship amounts to £10,000, including £12,000 of prizes for schools.

In parallel to the quiz, Commodore is running a special tour and sponsorship scheme. Every school taking part in the quiz will be offered the loan of two computers

connected by joystick, and a television which has to avoid buses in land driven who can repair the damaged perimeter. *Olympiad* is a variation of the popular *Olympic Games* theme.

Tynesoft's latest releases for the 64 include *Superfish*, a budget detective on romance at £9.95 in disk or £12.95. Utility programs for the Plus/4 are also on the way.

For more details contact Tynesoft, Addison Industrial Estate, Blackness-on-Tyne, Tyne & Wear, 061-414-9211.

# Commodore quizzes schools



Commodore 64 systems for three months. If at the end of the period the school wants to keep the equipment, Commodore will send £3 to every £7 the school raises in payment.

For further details of the quiz, contact Mrs Sharon Abernethy at The British Computer Society, 13 Mansfield Street, London W1M 0BP. 01-417 0471.

## Have a Banana



THE ODDLY NAMED Banana interface enables the 64 or Vis 20 to control DC motors, stepper motors and video. It has 14 four-millimetre

banana sockets on its panel, including eight video outputs, eight 10-watt logic signal outputs, and eight inputs. Special attention has been paid to regulation of construction and safety of use, and the Banana is recommended for use in educational environments (desk, programmable, none).

Software and hardware for specific experimental uses is provided, and the Banana is available direct from the manufacturer. Contact: Canda Associates on 0125 344210 for more details.

## Ross in control

ROSS ELECTRONICS' EF-170 television control centre enables you to command a TV, computer, video recorder, video game, cable TV or additional VHS dubbing and monitoring units.



without complicated wiring. Measuring 200 x 90 x 40 mm, the EF-170 has one phono input and five coaxial, which may be freely reconnected through a bank of six slide switches. The unit costs around £10 and is available from specialist microvisual dealers or from Ross Electronics, 49/51 Farnham Road, London NW11 2JH.

## West German printer link



Jansen-Electronic's PRINT-64 interface

JANSEN-ELECTRONIC has announced an intelligent multi-function Commodore printer interface to connect the 64 to devices such as the Epson FX 80 or 820.

PRINT-64 can dump 16-bit pictures in shades of grey, and can cope with user-defined graphics and all Commodore PET graphics. The interface comes with a manual program on disk, though this is not necessary for normal operation. Fourteen secondary addresses for print commands are also supported.

The interface's price is to be held at £65.95 until January 1st 1985.

Contact: Jansen Elektronik, Unter Ofenbach 1, 1000 Lower Essen 31, West Germany.



# Slomo cuts the pace of micros

CAMBRIDGE Computing's Slomo is now available for the 64 or Vc 32. The unique device consists of a cartridge port connector with a short length of cable, connected to a control box with two buttons and a track. The internal microchip intercepts data into the computer's operating system, with the result that the action of any program, be it text or machine code, can be slowed down on screen.

Apert Data makes it easier to debug difficult arcade games, Cambridge Computing suggests that software houses



might find the device useful in the production of screen shots. The Slomo is guaranteed not to damage the computer, and can be left connected at all times.

Cost is £14.95, through retail outlets or direct from Cambridge Computing, 61 Deacon Walk, Cambridge CB5 8JZ. 0223 314455.

## Pulling the plug on mains noise

COMPUTER USERS plagued by mains surges (preventing computer modes when the finger is misdirected) can now be pleased to know that two new products are to solve the problem.

The first, from Power International, is The Plug, costing £17.95. It's a 15 amp device which is simply fitted to your

computer mains cable, and goes into a conventional wall socket. The internal circuitry consists of a transient suppressor and an RFI filter, which effectively eliminate "spikes" in the power supply. Contact Power International, 2A Lombard Street Road, Portsmouth, PO6 1TB. For details write to:



It's The Plug



Power's Power Plug

equipment to protect, the Power Plug from Rayman Electronics is a four socket unit with a 150 joule spike suppressor rating. It features a noise filter, extension cable and AES plastic case, and costs around £30. Contact Rayman Electronics, 12 King Edward Street, Sharnbrook, Wetherby, Wetherby, WF8 1TH. 0829 748129 for more details.

# Spectrum emulator imminent

WHITBY COMPUTERS' ZX Spectrum emulator software, now announced at £14.95, is designed to allow Sinclair Spectrum Basic programs to run on the Commodore 64.

Several months ago, the company's claim to have produced a Spectrum emulator which could cope with machine code proved to be without foundation. Whoby Computers, a company best known for custom designed Basic extension packages for the 64, has now released the Sinclair package, which adds the commands from Sinclair Basic to the 64. Whoby claims that most Spectrum listings can now be typed onto the 64, while the use of 64 Basic is unaffected.

Whoby suggests the emulator as an ideal method for Spectrum owners who wish to upgrade to the 64 to retain Basic programs. At the same time adding many of the functions of Sinclair's Z80 Interface 1, which has an BASIC port, and giving the newcomer the use of the 64's quality keyboard, disk handling and serial port facilities.

We'll order the Whoby Computers' ZX Spectrum emulator as soon as possible. Meanwhile contact Whoby at 7, Chesham Hill Road, Whoby, Woking, Surrey GU24 0JG.

## Printing and plotting on a budget

BLACKBURNER based Datafax, distributor of products from Japanese giant Sakata Shikita, has introduced the SCP-800 four-colour plotter, which retails at under £200.

Apart from handling A4 paper, the SCP-800 has a 210 mm paper roll option. Printing speed is up to 12 cps depending on character size. Interface options include Centronics eight bit parallel, serial, or RS232C with an adapter.

For more information, contact Datafax at Datafax House, Borely Road, Romsey, Hants, RG3 1JX. 0334 44117.

At the same time the Pen-



Datafax's SCP-800 machine

man Robot Plotter, a three-colour device related to the same, has been announced. The Penman consists of an interface unit and a free-moving drawing head connected by a ribbon cable.



Penman's Robot Plotter

At £249, the Penman is cheaper than many pen-plotters, and is not limited in the size of paper it can use, since it does not have a work surface — it can be operated on an ordinary table. Connection to

the micro is by RS232C interface, and Commodore 64 software is in preparation. Contact Penman Products Ltd, 4 Hurlwood Close, Denham Way, Wokingham, W Sussex, RG4 4JH. 0007 28900.



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**Abstract**



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 (a) 1990-1994  
 (b) 1990-1994  
 (c) 1990-1994  
 (d) 1990-1994



**SUMMARY**  
A study was conducted to determine the effect of the amount of time spent in the laboratory on the learning of the concepts of the cell cycle and mitosis. The results showed that the amount of time spent in the laboratory had a significant effect on the learning of the concepts of the cell cycle and mitosis. The amount of time spent in the laboratory was a significant factor in the learning of the concepts of the cell cycle and mitosis.



**EDYX**

**Abstract**

The following table shows the results of the regression analysis for the dependent variable  $\ln(\text{GDP per capita})$  in the year 2000. The results are presented for the full sample and for the subsamples of countries with a high and low level of income in the year 1970.

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# Saving time and trouble with Basic sense

*Typing in listings or writing your own programs doesn't have to be a frustrating chore — Sarah Cotton passes on some useful hints*

WHILE WRITING your own programs, or entering those from books or magazines you will find yourself repeatedly trying the same basic keywords. Obviously, if these can be typed in very quickly then a lot of valuable time can be saved. Programs 1 should help you in developing this skill.

When you LIST the programs you will be asked to type a keyword. On this, following up with the return key. If you make a mistake then the computer will tell you and give you another chance.

Many of the Basic keywords can be abbreviated as you type in a program, but when it is listed the words will all appear in full. A complete list of abbreviations appears in the appendix of your user manual but Table 1 shows a few of the most useful ones. For example, type "HELLO" instead of

```
10 PRINT "HELLO"
```

When typing in any program you are very likely to make mistakes or wish to change some of the lines. Re-typing a whole line for one slight alteration can be extremely tedious, but the INST/DEL and cursor keys make things much easier. For example:

```
10 PRINT 1+4
```

Let's say you want to change the 4 to a 3. Use the cursor up key to take the cursor back to the correct row of the screen the line appears on. It should be flashing over the 4. Press shift along with INST/DEL and a gap will be created. Follow this by depressing the keys 2 and RETURN.

## Insert

Let's go back to our original program, this time changing the 4 to 28. This will make an "interesting" an extra character. As before, move the cursor until it is flashing over the 4. Press shift along with INST/DEL and a gap will be created. Follow this by depressing the keys 2 and RETURN.

This situation can be reversed by positioning the cursor over the 1 and pressing INST/DEL. Immediately the 2 will disappear.

This method of editing can also be very useful when many similar lines have to be typed in. See program 2.

Type in the first of these lines in full, remembering to press return. For each successive line move the cursor up and change everything that needs to be altered, including the line number itself. Remember to press return after each line, and use LIST to check all have been entered correctly. ▶

## Program 1

```
10 PRINT "1. REM CLR
20 R=INT(RND(1)*10)
30 FOR=1 TO:REACH=NEXT
40 PRINT QQ, PLEASE TYPE IN:IN REM CSR DOWN
50 INPUT #1
60 IF#1<0 THEN PRINT QQ, MISTAKE +GOTO4
70 REM CSR DOWN
80 RESTORE+GOTO 10
100 DATA PRINT,POKE,INPUT,GO SUB,RETURN,GOTO,THEN,FOR,NEXT,RESTORE
```

## Program 2

```
10 IF#1<0 THEN GOTO 10
20 IF#2<0 THEN GOTO 20
30 IF#3<0 THEN GOTO 30
40 IF#4<0 THEN GOTO 40
```

## Program 3

```
10 PRINT HELLO :PRINT GOODBYE :GOTO 10
```

## Program 4

```
10 FOR=1 TO 4
20 PRINT "HELLO"
30 NEXT
```





❖In entering programs from books or magazines I always find it useful to have a piece of card to put just below the line I'm typing on. As your eyes flicker from the screen to the program listing, it saves them from having to search around the page, and it also helps to avoid mistakes.

Book or magazine programs will probably contain a lot of REM statements. If you are concerned with the structure of the program or think you might like to make some alterations to it then these should be left in its full. Otherwise you could save time by just typing the REM's and omitting the following explanation. It could be dangerous if you got rid of the REM lines completely. For example, if line 100 is REM MAKE A NOISE and elsewhere there is another line saying GOTO 100, you would get an "Unlabeled Statement" error if line 100 was totally removed.

While writing your own program, it is very helpful to keep a list of variable names and what you are using them for. This will save you having to keep looking back over your program to find the first mention of a certain variable, and working out what it has been assigned to.

The amount of typing you have to do can be reduced by using short variable names — for example, A, B instead of AAA, BBB. Also, if a variable is used in 10 or more several times it is best to hold it in a variable rather than keep typing it out.

Multiple lines are lines containing more than one statement. For example: see Program 3.

## Branching

Each statement is divided by a colon (:) but it should be noted that each line can only be 80 characters long. These multiple lines reduce the number of key numbers that must be typed in. Before you start using them here is a brief warning. Consider this line  
10 IF X=Y THEN PRINT "HELLO"  
GOTO 100

The computer will only branch off to line 100 if X equals Y. If this is not true the whole line will be ignored.

When writing a program you will often find that parts of it will need to be repeated. This can be achieved in two ways. The first is the FOR...NEXT loop.

As I have already explained the method of repeating an operation a set number of times in an earlier article, I will not go into any details. Program 4 is a short routine to print a word 4 times in a row.

A For...Next loop only allows you to repeat an operation one time straight after another. A subroutine is a short program in its own right, which can be called by the main program at any time. The lines of a subroutine are generally in the thousands, and it is conventional to begin them with an explanatory REM statement.

The command "GOSUB K" will send the computer to the subroutine beginning with line number K. The "RETURN" statement does the opposite, returning the computer to the place where it left off in the main program. See programs 5a and b.

The subroutine is held in line 1000. ▶

## Program 5a

```
5 REM PROGRAM FOR VIC-20
10 PRINT A:REM CLR
20 INPUT "WHAT IS YOUR NAME " :IN$
30 GOSUB1000
35 PRINT:PRINT
40 INPUT "HOW OLD ARE YOU " :IN#
50 GOSUB1000
60 END
1000 REM MAKE A NOISE
1010 POKE$4200,15
1020 POKE$4200,200
1030 PORT=17020:NEXT
1040 POKE$4200,0
1050 RETURN
```

## Program 5b

```
5 REM PROGRAM FOR COMPOUNE 64
10 PRINT A:REM CLR
20 INPUT "WHAT IS YOUR NAME " :IN$
30 GOSUB1000
35 PRINT:PRINT
40 INPUT "HOW OLD ARE YOU " :IN#
50 GOSUB1000
60 END
1000 REM MAKE A NOISE
1010 POKE$4200,15
1020 POKE$4200,0
1030 POKE$4200,240
1040 POKE$4200,32:POKE$4200,327
1050 POKE$4200,17
1060 PORT=17020:NEXT
1070 POKE$4200,0:POKE$4200,0:POKE$4200,0
1080 RETURN
```

## Program 6

```
10 PORT=1705
20 READ A$(1),N(1)
30 PRINT N$(1),N(1)
40 NEXT
100 DATA FRED,123,JACK,350,PETER,874,SAM
    PH,100,JANE,720
```

# Mirage

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4 onwards. Each time the user inputs information, the computer is sent to the subroutine by the GOSUB command and works through it. When it reaches the RETURN it goes back to the statement following the GOSUB command.

The 'END' is required in line 60 to stop the computer running into the subprogram. If it is omitted you will get a 'Return Without Count' error because a RETURN has been encountered and no COUNT command has been issued.

The use of subroutines is essential when writing games programs. The computer needs to constantly branch off from the main program to perform such operations as moving objects, firing and making noise.

Subroutines can often be used in more than one program so it is useful to keep a record of the most valuable ones for future reference.

### Arrays

Earlier I mentioned the use of shorter variable names. Here a number way in which variables can save you time. Arrays are lists of variables with the same 'first name' which can hold either numbers or letters. Another number is brackets following the first name allows us to distinguish them. This number is called the SUBSCRIPT.

For example, let's read in 5 names along with their telephone numbers and print them out on the screen (Program 4).

The numbers are held in the variables N(1) to N(5) inclusive, the names in N(11) to N(15). Without arrays we would have needed 10 separate variables and a longer, more complex program.

So far we have not worried how long the list of variables in an array is. Your computer assumes that any array you mention contains 10 values with subscripts from 0 to 10. It is safer if you read this, and corrected if you need more, to add a DIM statement. DIM stands for 'dimension an array'. It should appear at the beginning of your programs in the form:

List number DIM first name (size of array)

For example, we should add the following line to our telephone number program.

```
5 DIM N(15), N(10)
```

An array can only be dimensioned once in a program. If we started our program to run over and over again then we would add the line:

```
20 GOTO 10
```

If instead we had added:

```
20 GOTO 5
```

then we would have got a 'Return'd Array' error.

Try program 4. Again we get an error. This occurs because the computer automatically performs a dimension operation in line 10, having not met the array before. This causes the reported in line 20.

The thing we've discussed should suffice as a bit more for you to use published programs, and to write your own in an efficient way. We'll hold on future articles at major ways to make using the Commodore computers easier and more fun to use. ■

### Program 4

```
10 N(1)=999
20 DIM N(15)
```

Table 1

COMMAND	ABBREVIATION
CLOSE	CL shift 0
CONT	C shift 0
DATA	D shift 1
END	E shift 0
FOR	F shift 0
GOSUB	GO shift 0
GOTO	G shift 0
INPUT	I shift 0
LIST	L shift 1
NEXT	N shift 0
OPEN	O shift 0
POKE	P shift 0
PRINT	?
PRINT	P shift 0
READ	R shift 0
RESTORE	RE shift 0
RETURN	RE shift 1
STOP	S shift 1
FREE	F shift 0
THEN	T shift 0
STEP	ST shift 0
WAIT	W shift 1

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# SOFT★HITS

## Wundaful

Starting out in "Wunda Wunda, Inter-Digital Music" game Via 3D scramble game, it takes by that splendid superior title.

Variable play that for is, "Wunda" exhibits a strange ability to invade the as long as the player's intention is pressed. Only when it's released again does gravity take over and he drifts back to earth.

OK, so it's not the sort of novel skill that'll guarantee him a place at Eton, but it certainly helps to avoid the time-revelation

and rugged terrain that swirls along during the game. It's also his only defense against the mutants that roam along alongside the



surface. Fail to dodge one of these and Wunda loses one of his five lives.

Four delicate terraces, each with its own brand of aggression, should keep the player waiting for quite a while. Graphics and sound are superb, with some of the smoothest animation and most polished music you're ever likely to encounter on the Vic.

Scrolling messages, responsive control and a sense of fun make this a package worthy of attention.

**Program:** Wunda Wunda, Via 3D

**Supplier:** Interceptor Music

**Price:** £10.00

**Graphics:** ★ ★ ★ ★ ★ ★ ★ ★

**Sound:** ★ ★ ★ ★ ★ ★ ★ ★

**Gameplay:** ★ ★ ★ ★ ★ ★ ★ ★

## Boogie with a ghoulie

You may or may not have seen the film (of not, did). It's a brilliantly scripted and produced comedy supernatural thriller about a series of men (that that would) scientists who set themselves up as ghost experimenters, and find themselves the only ones standing between the dreaded demons and the helpless world.

The game takes a lot of the spirit (and)

of the film, as you power your ghostbusters



some set off to the haunted houses and try to catch spirits as your ghost traps without

accidentally sucking yourself with your trapped spirit backpacks.

The most enjoyable aspect of the game is the outstanding musical score, based on Ray Parker Junior's hit song Ghostbusters, and the software speech which is certainly the most impressive yet produced on the 64. This game is going to be the Christmas hit — go on and buy it.

**Program:** Ghostbusters, 64

**Supplier:** Activision

**Price:** £10.00

**Graphics:** ★ ★ ★ ★ ★ ★ ★ ★

**Sound:** ★ ★ ★ ★ ★ ★ ★ ★

**Gameplay:** ★ ★ ★ ★ ★ ★ ★ ★

## Quickie brickie

Palace the people who brought video cassette your living room, has released a pair of original games for the Commodore Vic 3D. Brickie is one of them.

You have joystick control of a little brickie who begins each game at the bottom of the playing area.

Bricks rain down from that great lead cavern in the sky, forming an ever growing mound that steadily fills the screen. Fail to

avoid this falling masonry and you'll find out what it's like to be just another brick in



the wall. On top of this, you're not to pull in the top of the pile and stay there, not may

when you can only keep up the bricks at a time.

By starting about as the fastest, and using the limited landing you have for encouraging the pile, it's possible to scramble up to the next level. Unfortunately, I don't think that Palace, despite being the originators, have produced the definitive version of what is really a very good game play idea. Good, clean fun though.

**Program:** Brickie, Vic 3D

**Supplier:** Palace Software

**Price:** £4.95

**Graphics:** ★ ★ ★ ★ ★

**Sound:** ★ ★ ★ ★ ★

**Gameplay:** ★ ★ ★ ★ ★ ★

## Di now, play later

A monumental success in last year's which has gained a good deal of attention from the game press is none other than the Daily Star and Commodore (Dor), Di's Baby is actually quite good. But for those with a strong stomach and a good sense of humor.

There are five systems, in which you have to help the Royal couple pass out a coffin in their long series of babies. In the first, The

Days of Parenthood, Charles must contend with the party clearing up after the royal



entombment. It gets more and more ridiculous as time goes on. What with the trip to Di's birthplace, avoiding the pernicked and doctors and journalists, and flying supper

it's fun all the way. A good introduction too, composed of many versions of Cad Bane the Prince of Wales and other notorious figures.

Spice graphics throughout, reasonable sound effects and a unique Aggravation Factor scoring method make Di's Baby more than just an exercise in bad taste — though even at this level it's well worth looking out for. Not one to play while the Queen's Speech is on the telly on Christmas Day, though.

**Program:** Di's Baby, 64

**Supplier:** Red Tails Software

**Price:** £5.99

**Graphics:** ★ ★ ★ ★ ★

**Sound:** ★ ★ ★ ★ ★

**Gameplay:** ★ ★ ★ ★ ★

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# The Activision Eight.



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heavily defended most dangerous every-  
thing the enemy has at his disposal...  
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Return to the ground, please.



Market went to the charts. And so to stay there. Decafinated for total commitment. Speed through. Japan. The sell to see. *(Selling on commission 50)*



Marked the summer's end with a still far yet another routine night exchange at the toy factory. But something had gone awfully, awfully wrong.

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## Platforming miracles

Software Projects has given admirable support to the Yie 20 and the latest offering, *The Perils of Wily*, deserves to do well.

It's a version of *Mean Mine* (an official one at that) with 50 screens full of the potholes, walls and other obstacles we've come to expect from this sort of game.

Assorted opportunities in the form of wild

dogs, gear and random escalation design more strongly to move up to the next level.



As with all 'inner' derivatives, success

hinging into the air to collect magic items and capturing them are the deadly Pit & Walls.



a swift wedding warrior who can get you a

meditation. The animation of the screen again is remarkable, and the whole



appears almost as good as that on *Mean Mine* (especially a blood-curdling shriek

announces of entrance being, after that the head of finishing).

Yes, you've played it. It's another



chance to tell you — and gamers (see *Planet*) after planet of poor defences

depends on running, jumping and standing still at all the right times. Master this technique and the early levels should pose no problem. Unlike other versions, the Yie 20 is not split for choice when it comes to meter games, so this is a welcome bit of platformer. If you've got a 100%, a perfect and a five speed to spare, this one's worth a second look.

**Program:** *The Perils of Wily*, Yie 20 + 100

**Supplier:** Software Projects

**Price:** £5.95

**Graphics:** ★ ★ ★ ★ ★

**Sound:** ★ ★ ★ ★ ★

**Gameplay:** ★ ★ ★ ★ ★

many chips, and the Green Tamo, a giant robot who flies through the air and tries to kick you in the leg. Last segments with perfect-controlled chips, ticks and traps, but a good one is had by all. It's not working out which happens upon the doors to the rest of the 20 chapters, and I have yet to meet the ultimate goal, the ancient

World.

Overall, rather good.

**Program:** *Mean Mine*, 64

**Supplier:** US Gold

**Price:** £9.95

**Graphics:** ★ ★ ★ ★ ★

**Sound:** ★ ★ ★ ★ ★

**Gameplay:** ★ ★ ★ ★ ★

when you fall down a shaft. The pieces of the puzzle which will enable you to open the master control room, and get at the evil Elvia, are found by investigating various computer terminals and bits of furniture. Secret codes help you to freeze the malicious robot or sabotage the platform, which will be crucial in some screens.

Overall, a wonderful game, and hopefully the first in a long series from *HyperChix*.

**Program:** *Impossible Mission*, 64

**Supplier:** CBS

**Price:** TBA (black only)

**Graphics:** ★ ★ ★ ★ ★

**Sound:** ★ ★ ★ ★ ★

**Gameplay:** ★ ★ ★ ★ ★

travellers are blown to bits in a considerable

explosion, colour and chaos.

Remarkable that the sort of ideas actually used and although *Chix* is yet another version of *Galaxian* it's still very playable.

To be frank, I've seen better from *Remix* but most are *Amiga* games look very much like the one it's hard to quantify exactly what's missing from this one.

If you're the discerning, violent type this is probably worth a place in your collection.

**Program:** *Galaxian*, Yie 20

**Supplier:** Remix

**Price:** £5.95

**Graphics:** ★ ★ ★ ★

**Sound:** ★ ★ ★ ★

**Gameplay:** ★ ★ ★ ★ ★

## Martial artist

Nothing like a good bit of oriental mayhem to get the circulation going.

Bruce Lee, now not so much a person, more a trademark, has been dragged back from his stately grave to feature in the martial arts knock about from the left category *Demolition*. It's rather a good game, as the little yellow figure of Lee warms up and down the walls of a Chinese fortress,

## Kill him, my robots!

One of the first from CBS Electronics to offer set-up with age. Yank software while *Impossible Mission* is a remarkable cartoon like multi screen action spot in which you play a secret agent.

There are 32 rooms with 90 different robots out to squish you as you try to penetrate the computer-controlled hideaway of the nasty scientist Elvia, who is holding the world hostage with the threat of nuclear

## To boldly go where no man...

Here's a subtle little offering for the Yie 20 from Remix. Lots of cute little alien things down from outer solar system to my folks. WA, with all the diplomacy, not and global understanding that

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## Flights of fancy

Flight simulators for the squashed Vic are pretty scarce, but this has got to be the first comprehensive one for the contemporary machine.

And comprehensive it certainly seems to be. All the standard stuff: engine controls — speed, fuel, undercarriage, and so on — there's everything you need to take control of several tons of metal and a plane load of human beings.

In what must rank as the underestimation of the year, the only real restriction that the

simulation has been mechanically run down. When you consider the facilities offered by the basic Vic, the term 'underestimation' seems more appropriate.



There's no room for a 'through the window' display but the screen's full of data and graphs. These are well presented and

the easy Trakdown, when you're back



down the boxes. Having completed all the

look much like a snake eater.



Sledge the sticks for a bit and you will

respond satisfactorily to keyboard input.

The instructions supplied are clear enough to allow even the non-aeronautical amongst us to take off and fly along for a bit without killing anybody. Landing is another story.

Talking of landing, a nice touch when you crash (which you will) is a little impact one which won't hurt. Though it probably wouldn't satisfy the Civil Aviation Authority I found it pretty useful.

A great program. A must for anyone. **Supplies: Flight Zero One Five, Vic 20**

**Supplier: A&S**

**Price: £195**

**Graphics: ★★★★★**  
**Sound: ★★★★★**  
**Control: ★★★★★**

possible against all the odds, your Drifts can jump through a major window into the land of the deity. Graphics, and even the outspread Drifts found there.

Demons, aquarines (female form), and the disabled (overhead) Tails also occupy the grid.

Overall it's a bit whacky, but very play-able. Check it out.

**Program: Drifts, 20**

**Supplier: US Code**

**Price: £9.95 cassette, £14.95 disk**

**Graphics: ★★★★★**  
**Sound: ★★★★★**  
**Control: ★★★★★**

the entrance of a long (winding) tunnel, the flow of which is interrupted by gaps. Gridlock (one of these causes the tunnel to end and you're back designing the mine again).

Space Snake has all the features that make this such a huge success — the graphics are basic, the sound's awful and the scenery's pathetic. It's also very, very playable. Should do well.

**Program: Space Snake, Vic 20**

**Supplier: Commodore Business Machines**

**Price: £195**

**Graphics: ★★★★★**  
**Sound: ★★★★★**  
**Control: ★★★★★**

## Ducking and weaving

This isn't up to the standard we were led to expect a sight to be by the popular Chiller. However, at £195 it's difficult to complain about a perfectly playable little arcade game like this.

There are five screens, and in each your space ship is controlled by the joystick. In the first, bouncing aliens must be avoided for a certain time — you can't shoot them in screen two, but must dodge around and

everybody which are superior to your machine. The price is a bit more original, at



that you must travel up a ladder beam in clock with a mother ship, avoiding asteroids

and high priority walls. Then, you have to travel through 33 laser shields to destroy the alien mother ship, and lastly you must struggle to activate the defence system of the sun planet which is to become your home. I admit I haven't got that far yet, but although the graphics and sound effects are fairly laughable I think it's fair to say that all that bit should be enough to keep the kiddies happy on Christmas morning.

**Program: Ducking, 20**

**Supplier: Mastertron**

**Price: £195**

**Graphics: ★★★★★**  
**Sound: ★★★★★**  
**Control: ★★★★★**

Software companion — read your release to SOFT HITS, Commodore Magazine, 40/41 Little Newport Street, London WC1.

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# CLIFF HANGER

AUTHOR - JAMES DAY ORIGINAL MUSIC - BRIAN DOE

Thrill to the cartoon style action of *Cliff Hanger*, a really original, Wild West game. As Cliff the hero, you've got to stop the bandits shooting up the canyon. But with its own brand of really cartoon action fun, things simply aren't as they seem in *Cliff Hanger*. For a start, the boulder you throw at the 'ol bandits may just come bouncing back at you.

*Cliff Hanger* incorporates all the elements that have made New Generation games best sellers for the Spectrum, such as original ideas, superb graphics and hilarious happenings - but now it's available first for the Commodore 64.

Featuring 50 separate screens, three levels of difficulty, one or two players scoring, full of fun and joystick compatibility or user defined keys, *Cliff Hanger* is set to be THE Commodore games playing sensation. Available from any good software store for just £7.95.

shoota  
ids, then  
ota you!

NOW  
AVAILABLE

# Shoot the Rapids

AUTHOR - PAUL BURN

Ever wondered what it would be like to face the ferocious white water in a top class canoeist slalom run? Well wonder no more because you can enjoy the fast action thrill of competitive canoeing from the comfort of your own armchair with *Shoot the Rapids*.

It's a game that involves real skill because you must move your joystick to simulate paddling action. You must get through the gates of the slalom course in the fastest time possible, while avoiding the river bank and rocks. There are also extra hazards like rogue speed boats and interfering beavers to worry about.

This multi-level game features increasingly difficult river courses with superb graphics and smooth scrolling along the river.

Qualifying times have to be reached to move onto the next course.

With Hall of Fame, one or two player scoring and joystick compatibility, *Shoot the Rapids* is probably the best sports action simulation game devised to date. Available from any good software store for just £7.95.



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# Beyond the frontier

The software house with a background in role-playing games has plans for 1985 *Clive Jenkins talks to Clive Bailey*

HAVE YOU EVER paused to think that playing computer games involves not just an evolutionary element — the introduction of high technology into ordinary households — but two? The other is, of course, the concept of games playing as a hobby.

Until the computer boom most of us only played games (other than physical sports) on rainy Sunday afternoons or at Christmas. The concept of collecting and playing games, in whatever form or order, was a relatively new one, and will probably become the subject of many a sociology thesis in the 21st century, when all the work is done by machines and we will face the problem of entertaining our selves not just on rainy Sunday afternoons, but 365 days a year.

The software house **Beyond** is made up largely of people whose previous experience was in the field of board and role-playing games, strategic simulation and *Dungeons and Dragons*-type fantasy adventures. Now they are trying to do for the software market what they did for the games hobbyists, provide not only quality products, but an loyal and sympathetic back-up service.

## Experience

Marketing manager Clive Bailey explained that **Beyond**, a division of a well-known publishing company, was founded in 1983 by publishers **Steve Peart** and **Bill Deane**.

"Terry is a very experienced publisher in the computer market, and Bill has a considerable net for a good product. Together they co-marketed four games for a range of computers — including *Questers Games* for the 64 — and having observed the demand and established



Bailey of Beyond

made contacts they launched **Beyond** in April '84."

**Beyond** currently operates in an unique way — budgeted as a magazine, the company is obliged to release games as soon as they are ready in order to satisfy marketing procedures. "We're hoping all that will change in '85," mentions Clive — "we'd like to be more independent, to be able to release games only after we've had it up sticks, and be able to preview them to the press beforehand."

The **Beyond** launch titles, *Pythons* and *Lords of Midnight*, were for the Spectrum, though both are not available for the 64. *Pythons* is typical of the combination of arcade action, strategic thinking and high-quality programming which all **Beyond** titles feature. *Pythons* is the defence computer of the British 0 space colony, and the challenge of the game is to survive in real time for one hour, while defending the colony against invaders, along spacecraft, supply storages and equipment depots.

Mike Singleton's *Lords of Midnight* has made an immeasurable impact on the computer games market, more than just a graphics adventure. It features a "hand-crafted" adventure which shows the war through the players eyes in each step of the game. The player's objective is the defeat of the evil *Doomdark* nation by military means with the aid of the *Lords* or by the *Quest*, in which the character *Merlin* must find and destroy *Doomdark's* lair.

With 32 characters to control and 4000 graphic locations, *Lords of Midnight* can be a complex and rewarding game to play. Another Mike Singleton, like all the **Beyond** authors, does not work in-house: "Mike has been designing games since the age of six!" explains Clive, "though for

specialty had been in play-by-mail computer-mediated games such as *Barbaric Lords of Midnight* was his first attempt at producing an adventure game you could watch as well as play. We like to think that the success of *Pythons* and *Lords of Midnight* was the salvation of many games dealers through the slow summer period — because they opened to the hobbyists, they sold steadily, whereas other games sold seasonally. Mike's career on the scene with *Doomdark's Revenge*, in which *Linux* the Microprocessor searches for his kidnapped son *Merlin*. There are 3000 locations in this game, and 64-individual characters. The third part of the trilogy, *Rise of the Moon*, is planned for release in the Spring."

We asked Clive why **Beyond** launched their major games on the Spectrum, and have only now reached the stage where launches are planned on the Spectrum and 64 simultaneously. "Part of the problem is in finding sufficiently experienced program converters. *Steve Clow* and *Paul Verrey* produced *Pythons* and *Pit-Warrior*, the follow up. *Heathley Veysey* did the 64 conversion of *Pythons*, and we were very pleased with the result. Often you'll find that programs converted to the 64 from the Spectrum lose quality, but with our convictions we think they get better. Sound effects and graphics are certainly better on the 64, and we want people who can make the most of that."

## Wits

"Another of our resources is wit. We've placed *Pythons* at £7.95 and *Pit-Warrior* at £9.95, which we think represents good value for the retailer and the customer considering the complexity of the games. At the same time our market research indicates that there is a market for less sophisticated



games at lower prices — the 10-14 age group looking for about 'ten-age plus and single. We're thinking of launching a separate label to put out this kind of program, tentatively called *Mito*. The kind of price we'd be looking at would be \$3.99.

The main body of the market will consist of 14-21 year-olds, about 24% of whom are female. We don't particularly aim for the female market, though there is a strong tradition of female playing role-playing games, but Davidson's *Arctura* format took a villainess and a heroine. What puts many females off many computers is the unnecessary jargon — *D&D*, *Levi's*, *ROOM* and *RAID* are male procedures, and we try to avoid unnecessary technical references. Our game packages and instructions aim to be an interesting read rather than a technical manual."

Beyond's last four games, bought in from America, are admittedly "fillers", to keep the company going. "If they'd been released when we intended to bring them out, in May, they would perhaps have made



"They're all good games, but the state of the art. The Americans are desperate to dump software on the UK, because they made the mistake of treating game software as if it was big business, instead of a cult or hobby. They're finding out now that you can't just keep pumping out product, like pop music, which is absorbed passively, only very high quality product will be continuously, there it's really a seasonal market."

#### Revolutionary

"We'll always consider product from American companies, although many of the best ones have now been signed up by big corporations. One of the products we're working on is *Eye In Spy*, from Fantasy, based on the *Mad* cartoon strip. This features cartoon-quality graphics and a revolutionary screenshot technique called *SmartVision*, whereby two players can watch each other's characters, the *White Spy* and the *Black Spy*, watching an embassy for hidden documents and plotting bombs."

"*Eye In Spy* is designed by the creators of *Pyromax*, and features the first travelling on a surface-to-air hexaplane through a plot into sailing in *Parasomnia*. The perspective graphics are very convincing, and as you progress through the game you can acquire certain skills such as teleportation, invisibility and clairvoyance."

"There are several other products at various stages of production. *Operation Time* aims the headbanging features of *Loath* of *Isidalgia* combined with arcade features. *Nath* is a follow up to *Achie*, using the same kind of barrel-chucking



problems. *Shadow Legends* is being produced by Damon Design, part of the fall-out from *Imagite*. It's a strategy adventure featuring a team of six heroes and android opponents carrying out a daring mission in space, and using some of the scenarios for character interaction derived from the old *MegaGames*.

"We're also thinking of starting up a series of expert courses programs, based on the many magazines published by our parent company. We can establish the audience through market research, and consider programs based on hobbies like fishing or gardening."

"At the same time we're looking at the idea of an international label to put out Japanese and European games."

"Our promotion plans rely on word of mouth rather than heavy advertising and hype. The games-playing market went through everything the software industry is going through, starting with low-quality products and working up to very sophisticated and good games."



John McInnis — eye for a good product

"From my marketing experience in gaming, books and all companies it's clear to me that when we have to do a press release to the consumer in an exciting way and at an affordable price. What I'd like to do is promote games with competitions and good PR rather than with inflated advertising claims."

"The winner of the *Loath* of *Isidalgia* contest, John McInnis, was to have had the winning game transformed into a novel. That idea fell through, but what we're considering now is a role-playing game or fighting fantasy collection where magazine format."

"When we're trying to do it with through distributors like Comend and Microdistrib who we don't give a good service, and maintain beyond in such a way that the customers make a conscious decision to buy Beyond games because they know that they're high quality. A percentage of purchases will always be impulse buys, but we want to build up a regular following."

"We're trying hard to do things in a friendly way, the software industry isn't concerned for doing for doing things well but we're getting there." ■



Terry Pratt — experienced

a bigger impact. As it was, technical problems delayed them said Stranahan, and now perhaps they don't look as impressive." Once it judging from the point of view of someone dedicated to the highest programming standards — L. for *Achie*, *Arctura*, *MyChess 2* and *Mr Robot* are all impressive programs in their own right. *Achie* is a surreal metaphysical challenge in which you must manoeuvre a 'man-of-war' through an interconnected set of chambers, solving problems based on but not necessarily dependent on, logical thought.

*Mr Robot* is a 32-screen *Maze* *Maze* like challenge: with a difference, after you opening all the screens, you can design and save up to 26 screens on your own, using a cursor to select and place features.

*Arctura* is a complex underground adventure featuring high-quality animation. The hero, an Indiana Jones-type explorer, travels through the levels of a forbidden temple. The hero can walk, run, jump, shoot, crawl and fight with a variety of weapons, and must brave attacks from gnomes, snakes, fire-breathing plants, dragons and ogres.

There's also a powerful three-dimensional chess program, *MyChess 2*.

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listing of all available software
- **PROGRAMMING**  
The Logic 340, 350, 360, 370, 380, 390, 400, 410, 420, 430, 440, 450, 460, 470, 480, 490, 500, 510, 520, 530, 540, 550, 560, 570, 580, 590, 600, 610, 620, 630, 640, 650, 660, 670, 680, 690, 700, 710, 720, 730, 740, 750, 760, 770, 780, 790, 800, 810, 820, 830, 840, 850, 860, 870, 880, 890, 900, 910, 920, 930, 940, 950, 960, 970, 980, 990, 1000, 1010, 1020, 1030, 1040, 1050, 1060, 1070, 1080, 1090, 1100, 1110, 1120, 1130, 1140, 1150, 1160, 1170, 1180, 1190, 1200, 1210, 1220, 1230, 1240, 1250, 1260, 1270, 1280, 1290, 1300, 1310, 1320, 1330, 1340, 1350, 1360, 1370, 1380, 1390, 1400, 1410, 1420, 1430, 1440, 1450, 1460, 1470, 1480, 1490, 1500, 1510, 1520, 1530, 1540, 1550, 1560, 1570, 1580, 1590, 1600, 1610, 1620, 1630, 1640, 1650, 1660, 1670, 1680, 1690, 1700, 1710, 1720, 1730, 1740, 1750, 1760, 1770, 1780, 1790, 1800, 1810, 1820, 1830, 1840, 1850, 1860, 1870, 1880, 1890, 1900, 1910, 1920, 1930, 1940, 1950, 1960, 1970, 1980, 1990, 2000, 2010, 2020, 2030, 2040, 2050, 2060, 2070, 2080, 2090, 2100, 2110, 2120, 2130, 2140, 2150, 2160, 2170, 2180, 2190, 2200, 2210, 2220, 2230, 2240, 2250, 2260, 2270, 2280, 2290, 2300, 2310, 2320, 2330, 2340, 2350, 2360, 2370, 2380, 2390, 2400, 2410, 2420, 2430, 2440, 2450, 2460, 2470, 2480, 2490, 2500, 2510, 2520, 2530, 2540, 2550, 2560, 2570, 2580, 2590, 2600, 2610, 2620, 2630, 2640, 2650, 2660, 2670, 2680, 2690, 2700, 2710, 2720, 2730, 2740, 2750, 2760, 2770, 2780, 2790, 2800, 2810, 2820, 2830, 2840, 2850, 2860, 2870, 2880, 2890, 2900, 2910, 2920, 2930, 2940, 2950, 2960, 2970, 2980, 2990, 3000, 3010, 3020, 3030, 3040, 3050, 3060, 3070, 3080, 3090, 3100, 3110, 3120, 3130, 3140, 3150, 3160, 3170, 3180, 3190, 3200, 3210, 3220, 3230, 3240, 3250, 3260, 3270, 3280, 3290, 3300, 3310, 3320, 3330, 3340, 3350, 3360, 3370, 3380, 3390, 3400, 3410, 3420, 3430, 3440, 3450, 3460, 3470, 3480, 3490, 3500, 3510, 3520, 3530, 3540, 3550, 3560, 3570, 3580, 3590, 3600, 3610, 3620, 3630, 3640, 3650, 3660, 3670, 3680, 3690, 3700, 3710, 3720, 3730, 3740, 3750, 3760, 3770, 3780, 3790, 3800, 3810, 3820, 3830, 3840, 3850, 3860, 3870, 3880, 3890, 3900, 3910, 3920, 3930, 3940, 3950, 3960, 3970, 3980, 3990, 4000, 4010, 4020, 4030, 4040, 4050, 4060, 4070, 4080, 4090, 4100, 4110, 4120, 4130, 4140, 4150, 4160, 4170, 4180, 4190, 4200, 4210, 4220, 4230, 4240, 4250, 4260, 4270, 4280, 4290, 4300, 4310, 4320, 4330, 4340, 4350, 4360, 4370, 4380, 4390, 4400, 4410, 4420, 4430, 4440, 4450, 4460, 4470, 4480, 4490, 4500, 4510, 4520, 4530, 4540, 4550, 4560, 4570, 4580, 4590, 4600, 4610, 4620, 4630, 4640, 4650, 4660, 4670, 4680, 4690, 4700, 4710, 4720, 4730, 4740, 4750, 4760, 4770, 4780, 4790, 4800, 4810, 4820, 4830, 4840, 4850, 4860, 4870, 4880, 4890, 4900, 4910, 4920, 4930, 4940, 4950, 4960, 4970, 4980, 4990, 5000, 5010, 5020, 5030, 5040, 5050, 5060, 5070, 5080, 5090, 5100, 5110, 5120, 5130, 5140, 5150, 5160, 5170, 5180, 5190, 5200, 5210, 5220, 5230, 5240, 5250, 5260, 5270, 5280, 5290, 5300, 5310, 5320, 5330, 5340, 5350, 5360, 5370, 5380, 5390, 5400, 5410, 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16070, 16080, 16090, 16100, 16110, 16120, 16130, 16140, 16150, 16160, 16170, 16180, 16190, 16200, 16210, 16220, 16230, 16240, 16250, 16260, 16270, 16280, 16290, 16300, 16310, 16320, 16330, 16340, 16350, 16360, 16370, 16380, 16390, 16400, 16410, 16420, 16430, 16440, 16450, 16460, 16470, 16480, 16490, 16500, 16510, 16520, 16530, 16540, 16550, 16560, 16570, 16580, 16590, 16600, 16610, 16620, 16630, 16640, 16650, 16660, 16670, 16680, 16690, 16700, 16710, 16720, 16730, 16740, 16750, 16760, 16770, 16780, 16790, 16800, 16810, 16820, 16830, 16840, 16850, 16860, 16870, 16880, 16890, 16900, 16910, 16920, 16930, 16940, 16950, 16960, 16970, 16980, 16990, 17000, 17010, 17020, 17030, 17040, 17050, 17060, 17070, 17080, 17090, 17100, 17110, 17120, 17130, 17140, 17150, 17160, 17170, 17180, 17190, 17200, 17210, 17220, 17230, 17240, 17250, 17260, 17270, 17280, 17290, 17300, 17310, 17320, 17330, 17340, 17350,

# Beefing up Basic

Chris Whelan studies three extension packages for the 64

YOU WILL ALL, no doubt, have read some and again about how limited is the Commodore 64's Basic. CBM has taken a lot of stick for not appreciating the language which this otherwise fine computer was released. Having said that, we all want out and brought one you the same, so perhaps it's not so bad after all. Looking at the bright side however, the lack of 'improved' commands has meant painful employment for many a software person, writing Extended Basic packages. There is now a multitude of these on the market in various price and, one assumes, varying quality.

## Link version

One such package is *Linker's Basic* from Versus Software, which comes with a manual and a copy of the program on both tape and disk, so that when you buy that disk drive you're always promised yourself, you won't have to go out and buy the 'Link version' of the software (naturally more expensive), you will already have it. Also, if you are lucky enough to be running disks, the tape is handy as a back-up in case of unforeseen disaster.

The program could only claim that it's not only does it load in as fast as all, even from tape, it also leaves plenty of room for you to do your own thing. The manual is well laid out and is divided into sections: using 'colour-coded' notes under each command or function is detailed on a single page showing the Format, Parameters, and an explanation of exactly what it does. There is also a note at the bottom of each page listing keywords related to the one being described. I have to say that this really is the best manual I have yet come across. ALL the necessary information is

supplied, and it's easy to find and simple to understand. This is how all manuals should (and could) be written. Enough preamble, let's see if it lives up to expectations.

When the program is loaded you are presented with a title page confirming that you have *Linker's Basic* running and that you have 32000 Basic bytes free. All commands can then be used as in 'normal' Basic.

The first group of commands concerns characters with the creation and movement of Sprites graphics. There are 11 commands which enable you to do just about anything that you ever wanted to do with the built-in ones including: *Dispense*, *Priority*, *Activate* and *Collision* detection.

## Sound chip

The next section has 29 extra commands related to the control of the screen and graphics characters, and includes the widely used *PLAY*, *DRAW*, *HIDES* and *COLOUR*. I won't go into detail here as to do so would require taking over the entire magazine for the review, but suffice to say that with these commands at your finger tips there is almost nothing you cannot do with it except to Graphics, colour, drawing lines and rectangles, multicolour mode and User-defined graphics.

Sound is next, and there are 12 commands to help you get the best out of the 64's sound chip. Included are *ENVELOPE*, *WAVE*, *PITCH* and others that allow ready access to the delights of Ring modulation, Synchronisation and Filter techniques.

Input/Output manipulation is also new where many people get stumped... including yours truly... but with *Linker's*

Basic there are 11 commands to make life a little less complicated when checking for keyboard input, attaching characters to light-pen position. Disk commands are: ... *DATA* for finding errors, *DAR* for listing files and *DOS* which has 10 routines for doing most jobs from Formatting onwards.

## Functions

Number parsing can be difficult on the 64 but not with this program to help. There are 21 commands which run the series of *ParseInt*, *Hex conversions*, *Radixes* etc. testing and other mathematical operations. Four commands are included for string wrapping and 11 more under the heading of *Programming Tools*. These include assigning groups of characters to *Function keys*, memory load and Save, various parts of programs, key repeat and a 'quick keyboard entry' mode. When using this *ALPHA*, *Index*, programs the alphabet keys write either the SHIFT or C64 key will cause the computer to print the relevant keyboard equivalent to the key pressed, a list of which appears in the Appendix.

Next we have 11 Enhanced Programming Structures making *Repeat*, *Loops*, etc. much simpler using the *WHILE*, *DO*, *ELSE*, *REPEAT*, *UNTIL* format.

I was slightly disappointed to find that there are no *AUTO*, *RENUMBER* or *MERGE* commands... but there are 110 other useful ones! Apart from that small gripe, this is an excellent package and if you are looking for a Basic Extension then you MUST try this one out... and as CBM 64's not expensive.

A cheaper *Enhancement Pack* is *SuperBasic* from Intervox Micro. This one sells for less than £10 and has 71 new keywords. The





package contents of the program on a floppy disk it doesn't take very long to load, and a booklet listing all the commands available. It is divided into eight sections, the first of which covers Capslock. The "usual" ones are lists including HIRE, PLOT, DRAW and a rather nice WINDOW facility which allows you to display moving Ties at the bottom of a BERSK screen.

The Action on Speed only has five commands, while the HOLEY, DMV, DOGS, WATINGS, PULSE, WANTS and PLAY. While these may be sufficient for putting words in games, they leave something to be desired if you wish to be a little more adventurous on the main screen.

The Programming Aid screen has 12 saving commands including OLD, RENEWABLE and REPEAT. There are four more to help in Error trapping and a KEY command which lets you define the Function keys with strings of characters.

### Sprites

Sprites and User-defined graphics have a screen all to themselves. The commands included will allow you to set up Sprites, move them about the screen and check for collisions, either Sprite-to-Sprite or Sprite-to-Background. There are six Input/Output commands provided by Suphens screen say Taps, Dots and Appear/Disappear. Basic manipulation of numbers and strings is accomplished by seven commands, including converting Hex to Decimal (and vice versa) and reading the Function keys. Memory manipulation only provides four commands, CLEAR, and INDEX for erasing

and writing two consecutive memory locations and CODE and CODE for storing and placing characters in memory.

The last screen is dedicated to screen control and has 18 commands to help with screen and border colours, screen scrolling and screen positioning. Most of the 18 commands can be abbreviated, many of them to a single letter followed by a full stop. Although the manual is not what I would call comprehensive, it is adequate, leaving it up to the user of the package.

If you can't afford (or don't need) any of the more elaborate Basic Extensions, then this one is certainly worthy of consideration, especially as it costs no more than one (good) game.

Also called Suphensik (but that time again property) is another package that sells for less than £10. This one is by Century Software and contains 16 more Basic commands. The first thing that warns me to this point of software is the note in the booklet explaining that it resides in the DE block from 10000 to 10000 and makes extensive use of the spare memory locations in pages 0 and 2 of the RAM. Any program using these bits of memory may corrupt Suphensik! I wish more companies would tell us where their programs hide so that we could avoid making a mess of things when using these types of utilities when programming.

The first five commands we come across can only be used in immediate mode and not within a program. They are AUTO, DELETE, RENAME, OLD and PACK, all self-explanatory. The seven other utilities

are DERR, DORR, PULSE, ERASE, RENAME (for protecting an area of memory), AT (for placing the cursor at any screen position) and POP (for saving screen information).

There are seven found commands in Suphensik, and although some are concerned with King Mod in type, the program does seem to be the use of Pkern.

### Graphics

Most come 10 commands for controlling the Capslock on the 10. There are two types of display available, using 1000 bytes of memory and the two bit mapped display which use 1000 bytes and have independently addressable pixels. Three of the commands alter the content of the text display and the other eight control the high resolution graphics.

There are six more to help you set up your Sprites, move them about the screen and expand them both horizontally and vertically. Everything about the package is extremely well done, the software itself works, the examples given are very helpful and all the commands are well clearly explained. Considering the price of the package, it is quite excellent.

When looking for a Basic Extender, we all have different requirements and different amounts of money to spend, but I will say that, whether you need something as comprehensive as Broderik's Basic or whether you have just got right on one of the most modest offerings, each of the three packages looked at here is worthy of a place on your short-list. ■

# REAL ARCADE ACTION! FROM JETSOFT

**FAST LOAD 2 programs**

**BMX STUNTS**  
BMX STUNTS is the most realistic BMX game ever. It features a full 3D environment with a realistic physics engine. You can perform a variety of stunts and tricks, and the game is fully compatible with the new 64-bit version of Cavalon II.

**FAST LOAD 1 program**

**Cavalon II**  
Cavalon II is a fast-paced action game featuring a variety of weapons and power-ups. It is fully compatible with the new 64-bit version of Cavalon II.

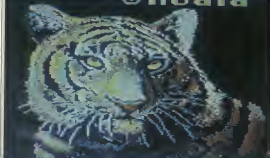
**FAST LOAD 2 programs**

**Quari**  
Quari is a fast-paced action game featuring a variety of weapons and power-ups. It is fully compatible with the new 64-bit version of Cavalon II.

**FAST LOAD 1 program**

**Jetsoft**  
061 775 0333

# Koala



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## Imitate the tiger

*Would that I did like the TigerTouchbook, but your computer screen images are not in the cat's claws. (Continued on page 10)*

THERE ARE lots of graphics software packages for the 486 and Vix which enable you to achieve satisfying results with the highest multi-colour facilities of the machines. Octavia's issue looked at many of these programs, and future articles will cover the latest graphics software. In the article we're more concerned with the hardware, which is becoming cheaper and easier to use all the time.

Just as an artist has two palettes, the computer graphics programmer must sometimes find the need for a solid surface on which to work, rather than the usual mouse keys or joystick, which give little feeling of "pointing" on a 2-dimensional or flat

panel recently the only other option was the lightpen, and we'll be looking at one of these straightforward, simple units, the Pixstik from CIB. First, though, two graphics "tablets", the Touchmaster, and Audio-graphics' Touchbook.

### Touchmaster

Although graphics tablets have been in use for many years in various CAD (computer-aided design) applications, it's only recently that the technology has become cheap enough, and the user base

wide enough, for it to be practical design units intended for home computers. The latest on the market is the Touchmaster, which is produced by a company set up by ex-employees of Dragon Data, specialist users of the Dragon Computers.

Touchmaster claims to be much more than just a graphics tablet, the advertising pushes it in a revolutionary new way of talking to your computer, avoiding the word to use QWERTY keyboards. Although this approach may be successful with computers like the Apple Macintosh, which uses a "mouse", it hardly seems necessary to imagine even further the playing of games. In any case, Touchmaster comes supplied with a graphics software

package, and even the games, educational and other utility "Touchmaster" packs aren't available yet, let's just consider it as a graphics tablet for the moment.

### Touchbook

Touchmaster has an A4 size control surface, over which is placed a thin plastic overlay printed with the control areas. The Touchmaster has its own mouse adapter, an interface cable to plug into the 486 or Vix 286 user port, a plastic stylus, and comes with a user guide and Touchware software. Once set up, possibly using a disk drive on the computer, the result is a computer-like mass of cables.

Touchmaster also has a foot switch socket and serial port, though these are of no immediate use.

The Multiphase program is loaded from tape or disk, and using the stylus on the overlay you can select all the options which are familiar from various purely software-based graphics packages.

At the top of the screen appears the words BRUSH & L&L, with a block of colour to the right of each number. Brush 0 is the background colour, while 1 and 2 are lighter brushes which can be used as a variety



of styles, also, vertical black line, horizontal black line, and right or left diagonal. To change brush type you just press the surprise button on the overlay with the style, and remove the pointer when the style you want is indicated on the screen.

Brush width can also be selected in range 1 to 9. There are several powerful shape commands, including two types of Circle, and Polygon using from three to nine sides.

Fill allows you to colour areas bounded by lines, and there are also Line, Dot, Text, Zoom, Erase, Load and Save, and View (to remove the current command).

Touchmaster is a Touchmaster product, but widely recognized for the market is over 1100. Despite claims for the accuracy of the mechanical surface, the cursor movements seemed steady and clean. The overlay leads to top of display if too much pressure is applied.

### Koolaid

Only if the forthcoming Touchmaster products show a good deal of accuracy and steady well Touchmaster could a change of dominating the market.

The major deal is the Koolaid, distributed by Andropore, which is, in some respects, a small, really graphics tablet.

Koolaid is more like A1 now, and is a handy wedge shape with two steady control buttons. Recent versions include soft waxy, which is extremely available on cartilage, this and cassette through the cartridge version is to be placed only have made the Koolaid more happy with the PAL TV system — the original American NTSC-based version would draw ellipses rather than true circles on UK TVs.

At 1100, Koolaid is much closer to being a standard in price for the commercial user. Moreover, the software doesn't suffer at all from not having the Touchmaster's overlay facility, the non-based command display is easy to follow and makes selection of all the available options easy.

The pressure-sensitive surface of the Koolaid also seems to give quick and steady cursor movements, and commands are simple since no separate power supply is needed and the pad plugs into Port 1 on the 64. Once the command display is loaded, positioning the cursor in the DRAW box and pressing a control button gets you into draw mode. Move the cursor off the bottom of the screen and the screen blank. You can then draw by pressing down a button and moving the cursor on the pad surface. Release the button and the drawing will stop.

### Attractives

The menu consists of Command, Brush and Colour. Below Command, Commands include Circle, Line, Dot, Bar and Frame, all of which have a Touchmaster feature which allows part of a design to be moved to any part of the drawing area.

There are eight different brush shapes, and 16 "textures" in which you can paint as well as the usual 16 colours. There are also Mirror, Ray, Zoom, Fill, Erase, Copy and Ray commands, and even a Swap



The Touchmaster product is an advanced low-pressure?

facility which makes it possible to take shapes from non-circles, "A", and transfer them to another, "B".

Obviously there are also a full range of Save and Load commands, as your masterpiece can be kept for posterity.

Also included in the latest Koolaid package will be a Koolaidmaster utility, which enables graphics to be hard-copied with a variable dot matrix printer.

Overall Koolaid is an attractive, efficient, fast product at a reasonable price. Educational and games software packages are plentiful, and since Andropore intends to manufacture the software itself in future there should be no supply problems. Highly recommended.

### Budget

For the budget end of the graphics market, the Plotix has been selected, this time by CIB. All software will be available on tape, as well as the budget price-range of light pens, and both 64 and 128 versions will be available.

Light pens work by intercepting the screen raster position by calculating the elapsed time between the start of the trace and receiving the light signal. As pen's eraser, this method doesn't lend itself to great precision, and all light pens therefore need to give width traces.

Plotix, which plays into the pocket port, comes with a graphics program, Paintbox, and four games which are of more value in demonstrating how the light pen works than they are as entertainment.

The Paintbox program has a brush, colour and command menu display at the top of the screen, and XY coordinates for the variable position. The rest of the screen is a blank drawing surface.

The left hand shift key is used to activate a command over the right box is selected with the member right. You have to place fairly slowly for the command to keep up with the lightpen, which is the main disadvantage of the system. However, the range of commands is good, with hard-ground, free, rectangle, fill, circle and line commands as well as a variety of brush.

Unexpectedly, the Plotix software features an Amstruc rompage by which last stages can be displayed in sequence to give a certain effect.

The Plotix manual is unusually complete, besides, including worked examples of drawing and animation to house with notes coming from the company and details of how to use the lightpen in your own programs. On balance, although a lightpen does not a satisfying graphics aid as a tablet, considering the pricing, which is under £35, it's certainly a system worth consideration by the unperpetrated computer artist.

For further details of these products, contact Touchmaster, 191 Box 3, Port Talbot, West Glamorgan, G55 7AG, Andropore, 10 Station Industrial Park, London Road, Reading, Berkshire, RG1 4AA, CIB Computer Solutions, Ashford House, 11 Rutherford Place, London, SE1 9JF 127.



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# 64 star game: Jeff Minter



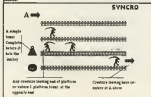
## **SYNCR0: a Game of Skill by Jeff Minter**

### **1) A Brief Description of the Game.**

**SYNCR0** is a test both of manual dexterity and quick thinking. You control the motion of a set of four conveyor belts. Along these belts are several *Anacidal* creatures. Each is running with a different velocity. Your aim is to manipulate the conveyor belts in such a way as to leave all the *Anacidals* 'running on the spot', each on a different belt. Moreover, you must do this so that each *Anacidal* comes to rest in a certain spot on each conveyor belt, the *Synchr0 Zone*. Once all four *Anacidals* are static and within their *Synchr0 Zone*, you have completed that level, bonus points are awarded depending on how long you took, and the game proceeds to the next difficulty level.

### **2) A Look at the Screen Layout**

The following diagram should help to indicate some of the game's vital points:



Using the joystick in controller port 2, you select which platform you want control of by moving the stick up and down (the selected platform glitters). Once a platform is selected, its speed is controlled by left/right motions of the joystick. By varying the platform's speed, taking into



# Winter's Syncro



**NEW GAMES PLAYERS** will need no introduction to Jeff Minter and Commodore. Since the earliest releases, Jeff's games have had a reputation for brilliant programming, music selection and exceptional playability. More have been influenced by the running theme of hairy animals — *Mount Camels*, *Sheep in Space*, and *Ancipital*, to name a few.

Now that the Hairy has written a 64 game specially for Commodore Horizons, it features the Ancipitals we all know and love, and presents the greatest challenge you'll ever have faced on your 64! The machine code program has been converted into Basic, just as accessible by Kevin Kephth's new *gogo* in the listing, which encourages a classroom routine to maximize credit, follow the instructions in the introductory K&M manuscript then carry on entering the rest of the program.

For a copy of the wonderful *Nature of the Beast*, send an SASE to Commodore, 99 Mount Pleasant, Tully, Mass. 02261-0009.

Turn to page 42 for ETWCOM



account the Ancipital's own velocity, you can control the positions and speeds of any creatures on your platform.

When an Ancipital is at *syncro zone*, it will begin to pulsate. Get the beast inside in the *syncro zone*, then move on to the next platform. The *syncro zone* can be in any position on the platform. Keep an eye on the Ancipitals passing through; you'll see them flash as they pass the limit.

Any Ancipital going off the end of a platform re-enters on the platform lower down, at the opposite end to the one it left. Beasts leaving the bottom platform re-enter at the top. Once all four Ancipitals are stationary within *syncro zones*, that round is complete.

There are complications, however. The Platforms have a tendency to slow down. When they start to do this, any ancipital will, of course, begin to lose station. On the higher levels of the game it is necessary to constantly send to already-placed creatures when they start to drift.

You are also up against a time limit. If you don't achieve *syncro* before the 16-ton weight hits the safety beam, the game is over. The weight is reset at the start of each new round.

You may also press the *syncro button*. When pressed, it sets the speed of the current platform to exactly the opposite of the first Ancipital it locates on the platform. The effect is to halt that Ancipital. It is useful if you need to position an ancipital quickly in the *syncro zone*, just press the button as it passes through. You can even use it on an already-stale ancipital if you think that the platform is just about to slow down. Pressing the button re-energizes the platform.

Take care with this control, though: you are only allowed 9 presses per round, and if there is more than one Ancipital on the current platform when you press, you may find that the platform matches the velocity of the wrong Ancipital!

The game has 16 levels. Each level consists of 4 rounds. Levels get successively harder in that the tendency for the platforms to slow down increases. You'll need to use the *syncro button* more often, and be quicker in your manipulation of the Ancipitals or they'll soon drift off station.

You'll probably find that it takes a little time to get used to the game because the concept is not one you've used to (see straightforward Up, Down, Left, Right, Fire!). The game is all the more enjoyable for the originality, and there's a nice bit of boogie wobble music to there to add to the enjoyment.

My best score to date is about 4500 odd, and I got to round 2, level 3. Good luck!





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```

10 REM *** A JEFF KINTER PRODUCTION ***
20 REM *** DATA CREATED COURTESY OF KGV
100 IN MARGIN **
30 REM *** BEFORE ENTERING THIS PROGRAM
  ENTER THE FOLLOWING ***
40 REM *** IN DIRECT MODE: ***
50 REM *** F00E 43,1:F00E 44,44:F00E 16
  384,0:CLAIMER ***
60 F00E3200,3:F00E3201,7:PRINT"*****
*****"
  PLEASE WAIT FOR A MO....
**
70 F00A5=2047T000000=READ#;F00E4D,8;TT=T
  T=8;NEXT
80 DFTT=X2F8003THEPRINT"DATA
  ERROR"STOP
90 REM *** WHEN PROGRAM HAS FINISHED OR
  WE IT TO TAPE OR DISK AS A BASIC PROGRAM
100 REM *** IT CAN THEN BE LOADED AND R
  UN IN THE USUAL WAY GOOD LUCK!!
110 F00E3200,14:F00E3201,8:PRINT"*****
  FINISHED"
120 F00E43,1:F00E44,8:F00E45,148:F00E46
  ,19:F00E47,148:F00E48,19
130 F00E49,148:F00E50,19:F00E51,8:F00E5
  3,48:F00E55,0:F00E56,48:CLAIMER#
140 REM *** SOME OF THE ABOVE LINES HEE
  S TONES TO FIT IN OR? ***
150 DATA11,8,1,0,128,50,48,94
160 DATA19,0,0,0,32,221,14,32
170 DATA25,18,167,0,141,4,212,141
180 DATA21,212,141,18,212,147,15,141
190 DATA24,212,141,12,212,141,5,212
200 DATA147,12,141,17,212,147,240,141
210 DATA12,212,141,4,212,147,118,141
220 DATA20,212,147,53,141,4,212,141
230 DATA1,212,74,74,8,0,254,252
240 DATA2,120,147,249,141,20,3,147
250 DATA8,141,21,3,147,24,141,24
260 DATA308,32,129,9,32,143,13,147
270 DATA0,141,45,13,141,44,13,141
280 DATA116,14,32,88,13,147,258,141
290 DATA21,308,147,57,141,39,7,52
300 DATA126,8,74,7,14,147,129,141
310 DATA23,308,141,24,308,147,240,141
320 DATA18,208,173,17,308,44,127,141
330 DATA17,208,88,74,173,279,8,240
340 DATA308,142,0,189,238,8,24,10
350 DATA157,238,8,189,238,8,42,157
360 DATA230,8,187,238,8,108,0,157
370 DATA238,0,232,234,8,208,238,136
380 DATA208,223,74,173,237,8,240,238
390 DATA63,0,189,238,8,24,104,157
400 DATA330,8,189,238,8,104,157,238
410 DATA8,144,8,187,238,8,7,138
420 DATA157,238,8,232,234,8,208,234
430 DATA134,208,221,74,3,70,207,7
440 DATA207,235,247,112,32,32,48,0
450 DATA48,121,232,238,70,74,49,234
460 DATA173,23,208,41,1,240,244,142
470 DATA9,32,37,9,32,5,13,32
480 DATA198,11,232,234,4,208,242,32
490 DATA216,7,32,221,10,32,16,12
500 DATA32,137,152,51,16,32,136
510 DATA8,74,49,234,138,72,34,10
520 DATA10,10,10,168,142,0,182,0
530 DATA34,157,238,8,208,232,234,14

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540 DATA208,244,104,72,173,189,70,8
550 DATA41,128,208,12,189,70,8,141
560 DATA229,8,32,188,8,74,70,8
570 DATA189,70,8,73,233,24,103,1
580 DATA141,238,8,32,147,8,104,72
590 DATA10,10,10,170,142,1,182
600 DATA330,8,157,0,34,232,209,192
610 DATA16,238,244,173,238,8,157,0
620 DATA34,104,170,74,142,0,142,32
630 DATA208,142,32,208,147,32,157,0
640 DATA4,157,0,5,157,0,4,157
650 DATA0,7,147,1,157,0,214,157
660 DATA2,217,157,0,218,157,0,217
670 DATA202,208,205,142,0,147,157,157
680 DATA144,4,147,137,157,145,4,147
690 DATA135,157,68,5,147,131,157,67
700 DATA147,132,157,238,5,147,133
710 DATA137,227,5,147,134,157,132,4
720 DATA147,132,157,132,4,232,224
730 DATA22,208,210,74,217,12,3,204
740 DATA215,7,240,1,74,147,4,141
750 DATA215,9,173,114,14,208,245,32
760 DATA117,14,173,0,220,41,3,201
770 DATA2,240,29,41,1,240,4,238
780 DATA71,10,238,71,10,238,71,10
790 DATA173,71,10,238,250,240,240,201
800 DATA4,240,242,41,3,141,71,10
810 DATA74,71,10,173,0,220,41,12
820 DATA201,12,240,41,41,8,208,4
830 DATA254,70,8,254,70,8,223,70
840 DATA8,173,204,11,157,220,11,147
850 DATA5,157,224,11,189,70,8,201
860 DATA8,204,3,222,70,8,201,248
870 DATA208,3,224,70,8,74,3,3
880 DATA349,228,73,10,173,73,10,41
890 DATA13,170,32,182,17,189,204,10
900 DATA141,188,10,189,170,10,141,189
910 DATA10,173,71,10,208,73,10,208
920 DATA3,74,157,10,174,72,10,157
930 DATA222,10,132,232,187,226,10,133
940 DATA232,147,1,32,143,10,174,71
950 DATA10,189,222,10,132,232,187,226
960 DATA10,123,253,173,189,10,140,0
970 DATA148,252,200,192,32,208,247,173
980 DATA71,10,141,72,10,173,177,12
990 DATA240,14,173,177,12,182,189,10
1000 DATA141,32,208,145,33,208,204,177
1010 DATA12,74,147,0,141,32,208,141
1020 DATA33,208,74,12,3,0,4,2
1030 DATA4,3,3,7,1,3,7,3
1040 DATA8,4,3,4,0,5,0,11
1050 DATA11,12,12,12,12,1,1,1,15
1060 DATA15,12,12,12,11,144,48,228
1070 DATA32,214,217,217,218,1,204,228
1080 DATA10,240,1,74,147,3,141,230
1090 DATA0,74,74,10,181,80,175,80
1100 DATA60,92,92,124,7,4,3,2
1110 DATA1,2,3,4,138,10,148,187
1120 DATA248,10,153,4,208,187,247,10
1130 DATA153,1,208,188,7,12,187,253
1140 DATA0,157,37,208,187,245,10,41
1150 DATA224,217,11,12,208,4,174,187
1160 DATA0,157,37,208,187,3,14,240
1170 DATA4,223,3,14,74,100,11,187
1180 DATA245,10,24,122,1,11,121,70
1190 DATA8,157,243,10,187,245,10,41
1200 DATA240,201,44,208,10,32,228,11

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1210 DATA169,240,157,245,10,208,12,201  
 1220 DATA169,240,8,32,228,11,167,80  
 1230 DATA167,240,10,222,171,11,240,1  
 1240 DATA169,167,11,72,44,128,240  
 1250 DATA167,104,73,208,24,108,1,72  
 1260 DATA104,41,7,73,7,24,105,1  
 1270 DATA167,171,11,234,173,11,169,173  
 1280 DATA11,204,174,208,8,167,173,167  
 1290 DATA173,11,169,173,11,127,248,7  
 1300 DATA167,1,11,41,128,240,1,96  
 1310 DATA167,173,11,24,105,4,157,248  
 1320 DATA167,96,4,1,2,162,162  
 1330 DATA174,173,167,70,8,240,13,41  
 1340 DATA128,208,4,222,70,8,222,70  
 1350 DATA98,204,70,8,96,222,222,11  
 1360 DATA208,280,167,222,167,222,11,222  
 1370 DATA224,11,208,240,167,2,167,224  
 1380 DATA11,208,212,167,224,167,22,8  
 1390 DATA1,2,3,167,248,10,24,165  
 1400 DATA22,127,248,10,201,168,208,3  
 1410 DATA167,40,167,247,10,224,7,12  
 1420 DATA167,7,12,41,3,157,7,12  
 1430 DATA167,3,167,3,14,96,9,1  
 1440 DATA1,2,160,64,96,162,1,173  
 1450 DATA116,14,208,241,167,0,141,15  
 1460 DATA12,162,0,160,0,167,248,10  
 1470 DATA11,224,217,11,12,240,7,260  
 1480 DATA173,4,208,241,240,46,167,7  
 1490 DATA12,122,247,176,247,208,240,168  
 1500 DATA17,12,167,0,224,128,1,11  
 1510 DATA123,70,8,208,12,201,222,208  
 1520 DATA17,167,1,11,41,128,240,12  
 1530 DATA208,7,167,1,11,41,128,208  
 1540 DATA3,208,10,12,222,224,4,208  
 1550 DATA186,173,13,12,201,4,240,1  
 1560 DATA96,224,167,32,141,177,13,208  
 1570 DATA44,13,173,44,12,201,4,208  
 1580 DATA18,167,0,141,44,12,222,45  
 1590 DATA13,173,48,13,201,10,208,3  
 1600 DATA204,45,13,32,32,13,167,1  
 1610 DATA141,67,14,167,37,141,37,7  
 1620 DATA167,201,141,28,14,167,64,141  
 1630 DATA23,14,167,32,141,39,14,167  
 1640 DATA20,141,37,14,32,30,14,96  
 1650 DATA9,0,17,22,14,3,18,15  
 1660 DATA32,37,32,18,15,31,14,4  
 1670 DATA23,48,32,32,13,3,22,5  
 1680 DATA12,32,48,32,32,32,17,3  
 1690 DATA12,18,3,32,48,48,48,48  
 1700 DATA48,48,162,0,167,179,12,167  
 1710 DATA32,7,222,224,40,208,240,142  
 1720 DATA160,167,134,167,70,7,167,133  
 1730 DATA167,71,7,167,4,167,70,217  
 1740 DATA157,71,317,202,202,208,224,162  
 1750 DATA9,167,67,14,167,113,7,167  
 1760 DATA127,14,127,123,7,167,7,127  
 1770 DATA132,317,167,113,317,332,324,38  
 1780 DATA208,224,96,1,2,222,220,2  
 1790 DATA222,4,7,0,0,222,222,4  
 1800 DATA202,4,7,0,0,222,172,160  
 1810 DATA128,112,96,80,64,32,160,0  
 1820 DATA174,44,13,167,38,13,141,1  
 1830 DATA11,167,32,13,141,2,11,167  
 1840 DATA38,13,141,3,11,167,48,13  
 1850 DATA141,4,11,32,173,14,141,11  
 1860 DATA12,32,173,14,141,12,12,32  
 1870 DATA173,14,141,13,12,32,173,14

1880 DATA141,14,12,174,45,13,167,46  
 1890 DATA13,141,204,11,167,80,14,141  
 1900 DATA132,13,173,45,13,24,108,48  
 1910 DATA41,34,7,173,44,13,24,108  
 1920 DATA48,141,47,7,96,38,167,32  
 1930 DATA41,8,208,141,10,208,141,142  
 1940 DATA13,141,9,208,167,148,141,11  
 1950 DATA208,167,208,141,222,7,167,201  
 1960 DATA41,222,7,167,13,141,43,208  
 1970 DATA67,7,141,44,208,96,224,13  
 1980 DATA208,222,173,114,14,240,3,74  
 1990 DATA84,14,173,67,14,208,228,228  
 2000 DATA42,13,173,142,15,201,147,240  
 2010 DATA4,141,9,208,96,147,142,141  
 2020 DATA42,13,141,9,208,141,116,14  
 2030 DATA167,202,141,222,7,167,32,141  
 2040 DATA177,13,167,129,141,39,14,167  
 2050 DATA177,14,27,14,167,174,141,28  
 2060 DATA2,167,14,140,28,14,32,30  
 2070 DATA24,96,0,0,0,0,173,177  
 2080 DATA2,208,13,173,114,14,240,10  
 2090 DATA173,0,222,41,14,208,3,74  
 2100 DATA74,0,173,67,14,240,231,172  
 2110 DATA45,13,208,142,4,228,142,13  
 2120 DATA173,140,13,141,9,208,201,147  
 2130 DATA240,32,152,72,134,72,32,70  
 2140 DATA14,104,170,104,168,167,0,133  
 2150 DATA208,178,228,208,222,74,38,14  
 2160 DATA167,32,144,142,13,141,9,208  
 2170 DATA167,0,141,67,14,74,7,14  
 2180 DATA9,134,72,224,40,7,167,43  
 2190 DATA7,201,38,208,8,167,48,167  
 2200 DATA67,7,202,208,228,104,170,134  
 2210 DATA208,224,96,0,173,177,13,240  
 2220 DATA1,96,173,0,222,41,14,208  
 2230 DATA248,173,39,7,201,48,240,241  
 2240 DATA204,37,7,167,14,141,177,12  
 2250 DATA167,32,144,29,14,167,21,141  
 2260 DATA27,14,167,128,141,25,14,167  
 2270 DATA160,141,28,14,32,30,14,162  
 2280 DATA9,173,71,10,152,321,7,12  
 2290 DATA240,7,222,224,4,208,244,240  
 2300 DATA23,167,1,11,73,222,34,108  
 2310 DATA1,153,70,8,167,1,11,41  
 2320 DATA128,240,8,162,170,222,70,8  
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 2420 DATA24,127,32,14,167,48,34,222  
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 3310 DATA212,173,121,18,141,130,12,96  
 3320 DATA0,12,4,14,7,19,4,14  
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 3800 DATA232,149,14,141,28,212,96,14  
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 4030 DATA127,0,14,127,0,12,127,0  
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 4850 DATA224,43,142,224,28,1,192,24  
 4860 DATA12,192,12,247,128,3,224,0  
 4870 DATA0,112,0,128



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- 53 Find out what's showing at your local cinema.



- 54 Book seats for a night at the theatre, opera or ballet.

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- 56 Order your groceries and have them delivered.

- 57 Make a computer date in complete privacy.

- 58 Put your finger on a job.



87. Link up with a legal eagle.

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- 71 Unearth a garden centre.

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# TOWER OF ADVENTURE

## The rules of Conway's castle

At last, a *Concordia* adventure column. *Dungeon* mistress Barbara "The Barbarian" Conway sets the scene

WHEN IT COMES to computer gaming, enthusiasts tend to divide into two camps — the shoot 'em-ups and the adventures. There is, admittedly, some degree of overlap between the factions but, for the most part, devotees of rapid-fire arcade games tend to prefer to exercise their reflexes, while adventure addicts search their brains. And, while light-hearted gamers, you won't have much difficulty guessing that my own inclination is very much more towards a laptop open than anything up 130,000 pixels on "Atari Space".

Unfortunately, my notions about adventure have not, up to quite recently, been all that well rooted for on the *Concordia* front. The best games available have tended to be arcade, using the machine's formidable sound and graphics facilities, open to a few exceptions (and predictably expensive) adventure games from the likes of *Infocom* and the *Atari*. Now, however, thanks to a few outstanding UK software houses and at least one remarkably healthy PC would-be publisher, the few changes dramatically.

### Logical

Offering from two of these notable software houses, *Level 9 Computing* and *Microline House*, are amongst the most recent, but before I get onto these, let me take a quick look at the virtual question of what makes a good adventure. That is all, of course, a highly individual judgement, but, since this individual is doing the judging, you might as well know what his opinions are to start with.

*Rule One*, which must NEVER be broken, is simple. All good adventures must be logical. That doesn't mean that elements such as magic can't be used. It just says down that, given an environment whether of interwar, post-apocalyptic, or fantasy, it is whatever that that things be possible to do in your way through a situation once you understand where you are. That's a game which, say, does you with a disease and expects you to guess that the way to escape is to turn three waypoints

and work out your finger is not being logical. On the other hand the solution to getting a worm out in a Level 9 adventure, fighting a woolly mammoth with a sword so that it jumps out of its digestive tract once, is logical. Well, but logical.

Which brings me to *Rule Two*. A good adventure should start imagination and a sense of fantasy. The number of "adventure" games which consist of just trudging around a pointless boring world, pecking up gold and pushing the red diamond in darkness is huge. They tend to be just about as much fun as doing the washing up. It is possible to have some brains and a clearly "fantasy" and dragons" type story like the original masterpiece *Adventures* had plenty of mythical touches but a depressing number of them are either just don't seem to think a moment to do much more than "Go North", "Check Tree" etc. *Barney* is a right bit of fun in a rain attempt to find things up for full range off.

*Rule Three* may look like a subset of *Rule One*. Adventures should not be able to rely on dumb luck. That's a game, such as *The Valley*, in which players will secure a fragment and the outcome depends solely on random chance, is regarded with suspicion. Fighting is acceptable, although some depth adventures manage without quite neatly, but the adventure should have in only no punishment to come along, even if only in choosing which weapons to wield, how to fight or an option to take better may be.

### Demos

*Rule Four* is already present where I sit. *Concordia* Adventures should have well put words as to what the adventure is made. I mean having to find a demon up there. Why can't I turn the option of coming to the knowledge of a good thing? (I'll be honest).

Lastly, *Rule Five* means screen layout. A good adventure should not good contrasting background and character names, while a pitiful adventure should always give the option to turn off the pictures. However good the story, if the text is

difficult to read then after a time it's a choice between giving up or risking a spinning headache. And, where pictures are consistent, you can go off pretty pictures, however well drawn, if you keep on having to wait for the same character to fill the screen. And, here, I want to say, are not even that pretty and take far too long to appear anything.

You may notice that the five rules don't specify a complex parsing program, or a language interpreter which can cope with multiple statements, nor is it possible to have such a reasonable adventure even make the standard word "verb" followed by noun format that it's not to have a good power, and I have never understood the reason for players that force you to guess which instructions they will accept if the advent vocabulary is very large, then players can still be given a basic list of acceptable commands to get them started.

### Shirlock

When it comes to large vocabularies and obscure patterns, *Microline House* adventures have very few rivals. *Microseries*, it was, which is a new trend in that most adventures with the others. *The Hinton*, and *Shirlock* and *Shirlock* can only help on guidance in reference. *Shirlock*, based on a famous detective, features graphics, vivid effects, and "character independent" which goes considerably further than *Shirlock*. There are a lot of down and up on the performance in *The Hinton*.

Turned off in the past of *The Hinton* and, while the adventure is an on and off, with an on-screen clock, you'll need to do a lot of exploring of your own memory before the faithful *Hinton*, who is naturally there too, gives you the clue to where *Concordia* can be complex, using the *Microline House* "English" language, which can come in handy as the moment last away.

Turned off in the past of the matter. On my first few attempts, when I eventually got to the scene of the dramatic crime (or, in most cases, crime since so far I've tried



across these waters including my own that questions that lost Empire. Lancelot had assumed the wrong person had refused to leave to return. One of the joys of English is that, with people less vibrant than Lancelot, you can deliver events, ask questions or even get them to do things for you. Of course Watson, dear departed old knave that he is, doesn't show much independent intelligence, but then he wouldn't would he? He does, however, come in very handy for carrying things and once you've said "follow me" to him, he walks with you.

#### Victorian

It's terrific fun, the graphics are ingeniously drawn in a small window and can be switched off, and there are some very pleasing sound-effects which add to an admirable sense of the Victorian period, steam trains, horses, cabs and all that, although programmer Philip Mitchell and his team have done an admirable job, there are still plenty of irritating (and a few glorious) bugs. Worst of these is the fact that, so essential to the program, there was no screen for a row now to explain that you are carrying too much to make anything else. Thus it is perfectly possible to see a patrol on a rope, try to take it, and be told that there is no patrol there! And I remember being told, when I went into the library and tried to look at the books "I am no bookworm!"

Also, although you can save a game in tape (there is a pre-record facility on the Spectrum but not for the CBM 80) once you "quit" you have to reload the cassette to start another game.

But don't let that put you off, the program as a whole is a great 1 hour's entertainment for the whole mystery pot, and at the moment I'm being diagnosed as a Chess man, maybe I have in Leatherhead, while Watson is following a principal suspect for me I may be you know more about developments soon but, in the meantime, entertain for yourselves. After all, my dear chap, you know my methods.

It turns out that Melkonne House is spooked at reason that winter. Not only do we get the mystery and suspense of Sherlock, but they also provide us with the considerably more varied, but no less strange fiction, atmosphere of **Hampstead**. The adventure, incidentally, is in close touch of Rule Four, since the aim of the game is to become a "Hampstead star", and the main game is to make **Hampstead** as they come. Also, it's also actually funny and highly original. No dispute here (unless you count the marauding gangs of trouble-worshippers) but the spirit of actual dispute is very far in evidence in the progress of battle with a rival.

#### Devil

The opening scenes are distinctly reminiscent of **Urban Upstart** and your very first action, as you find yourself in the depressing lounge of your dingy flat with a television showing "1-2-3" in the corner, should indicate how likely you are to "take" **Hampstead**. It's not just a matter of looking at that's a coach. But before you are accepted there you must have showed your way up the social ladder, progressing from a pathetic start (and for **W&T** careful at the beginning of your wind up with a national record before you've even got going) to role-playing fiction, through various stages of increasing constraints and development. First success leads you living entirely into **Hampstead** life as a dedicated Guardian crossword-solver, jigger and book-lover with three children at least, one of whom is called **Tanganyika**.

This is fun-only, and fairly simple "week-end" sort of fun, but you can do a lot with it. Location very close, you can just remember that once you've left a you can't return there) through the widest parts of North West London to the West End, and, indeed, if you play your cards right and don't get caught in a highly only maze-travel, via the corridors of power to the Ultimate Goal, **Hampstead** itself. This game plays in own atmosphere (legitimately as far as I have been able to get and, as a one-time resident of **Hampstead**, I can only say that of authors Trevor Lowe and Peter Jones show themselves at the top of Royston Hill, where religious customs is likely to be in its striking **Alphons** House) to them, and

quite right too.

**Hampstead**, incidentally, is one of many references to be written with the aid of **Gilbert's excellent Quiz** program, a utility which takes much of the technical gaud out of putting together a text-only game and lets the writer concentrate on producing an imaginative plot.

Imagination has never been a problem for the Level 9 Computing team. Brian de Eskin, the talent in the company's **Open-hall** design, while preparing to be recruited last far the first time. The plot has you, again **Ken** (Kierley), struggling both to save yourself from angry mobsters after being framed for a terrible crime and fighting mobsters, and after further, adds to reestablish the urban-dominated City of **Worship** on the planet of **Eskin** and save your own chaotic city.

#### Parade

Before you get anywhere near the city you'll face (if you survive) people ranging from a **Hampstead** guard through a riding police to the dreaded **Knights** (no, don't ask) and if you actually make it into **Worship** you may find that the colonial-type while you appeared in **Hampstead** come in very handy. Every parade on **Eskin** has a witness, but before thinking in very much the name of the game. If you're disgraced **Level 9** will supply a comprehensive database.

The command format is basically confusion but the vocabulary is massive. Once into the game you'll be lost, but **Level 9** has made an extraordinary blunder in the start. Without a great deal of blind luck you'll certainly be freed by the capture of the wonderful standing almost immediately so I have no comparison in telling you the following. Once you've left the crashed plane down as "E. 840 D-10 D-10 D-10 W&T". Now you're on your own.

**Before** will be serving a mass help service for the daily discipline who have got stuck in an adventure. **What is Your of Adventure at Commander Morton, 12/11 Little Newport Street, London, and it'll try to deal with regular problems through the columns. Send for we cannot enter into individual correspondence.**







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```

1000 *****
1010 DIM B(100)
1020 *****
1030 *****
1040 *****
1050 *****
1060 *****
1070 *****
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```

## Commentary

**Lines 800 and 801:** This loop creates the number of banks specified **Lines 800** and **801**. The second loop will create the number of columns specified.

**Line 804:** The start position for drawing each separate column. This position will start at the far right of the number of columns and move four spaces to the left for each new column. In addition, when one bank is finished, the next bank of columns will be printed out going down, and to the right of the last.

**Lines 809 and 810:** These lines create a dummy loop to default around the screen which draws a column of the value for that column at once — the loop is a dummy one because it is never executed unless there are any calculations.

**Lines 880-910:** The loop which draws the main part of the B-B columns. The loop variable is set to move from one to the length of the column. On the first pass through the loop, the last of the column is printed — a character from C(0) is used to move from the bottom of the line to the colour of the current bank. On subsequent passes, different characters are used to represent the date and time of the column as it is built up.

Now that the upward movement of the printing is created by the use of colour control characters rather than the use of CHR\$(0) to position the printing. To use CHR\$(0) would mean that we would always have to know where we were on the screen.

```

1000 *****
1010 DIM B(100)
1020 *****
1030 *****
1040 *****
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1980 *****
1990 *****
2000 *****

```

Using the current methods we only have to know where the column starts, then move relative to that until the top of the column is reached.

**Line 910:** The top of the column is added **Lines 900-910**. When the columns are finished there are some empty edges left at the bottom, these lines remove them up.

## Testing

Enter a new line  
run command

and RUN the program. Speed is a user value of one, three columns and three banks. The names for the user are unimportant, so make your own choice. When prompted for the values of the columns, enter the following:  
4,3,2,0,0,0,0,0,0,0

You should now see the three banks and three columns clearly displayed, with the top of each of the three columns appearing to make a smooth surface from the first bank to the last. Note that in reading the values for the three banks, you must assume that the top of the first bank has continued back and up to the statement position in the example on the screen, what you have is three columns, with the three lines on each column representing the

```

1000 *****
1010 DIM B(100)
1020 *****
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1070 *****
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```

same value, though the first line is physically lower on the screen. This is necessary to preserve the illusion of three-dimensional.

Experiment with the program to see how it deals with differing data values. You will find that it will only really work for data where a bank is never higher than the one below it.

Module 2.2.2 shows how to disk or tape.

## Commentary

**Line 900:** One thing to note about the PRINT # statement is the position of a number of B's in the line. You may remember that in the first module of the program, B1 was not equal to CHR\$(10), which is the RETURN character which signifies the end of an item to be printed. When printing several items into a file from a single PRINT # statement, unless B1 is included in between the items being printed, all the items will be run together. The actual variables printed to the file are simply some of the important values which were input in the second module of the program.

```

1000 *****
1010 DIM B(100)
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**Line 900:** In the commentary on the last line it was stated that B1 for some other variable equal to CHR\$(10) had to be included to separate the items. So why is it not done in the case of these two loops, which print the contents of two arrays to the file in disk? The answer is that whenever a PRINT # statement is executed without parentheses, the CRL automatically follows the last item printed with a RETURN character — that is why items are printed on separate lines if the screen if the preceding item does not have a carriage or some other end of line.

**Lines 900-910:** Note that we do not have to use the B1 variable when INPUTTING data. It is in the nature of INPUT and INPUT # that they do not recognize that they have required an item of data until either RETURN is pressed or a RETURN character read from the disk.

Module 2.2.2 is the control module. Again, you have already entered many of the lines of this module in building up the test procedures on the program. All that remains is to ensure that the module is completed by checking against the string.

## Testing

Simply RUN the program. You should now be able to input the data for a graph. When the graph has been displayed, printing any key will result in the prompt for saving the data. If you respond Y, then RUN the program again and answer Y when asked if you wish to load from disk. You should now see the same graph displayed. ■

## The Working Commodore 64

Hardware, software and applications

David Lawrence



This month's feature series on software from The Working Commodore 64 is presented by David Lawrence. He is currently at Southern Cross and writes 64.





a diamond can also claim his or her share of the Royalty Fund  
**Blue** This grows with every copy sold up to a maximum of £1 million

**Yellow** The Spirit of the Stones book is a great read

**Pink** The Spirit of the Stones software is great entertainment

**Blue** But they're much more than that

**Yellow** They're an adventure

**Pink** A fascinating tale of mystery and imagination

**Blue** A voyage of discovery on the Isle of Wight

**Yellow** A voyage of discovery

# STONES HIDDEN ON THE ISLE OF WIGHT.

**Yellow** There are 41 of them  
**Pink** 41 real diamonds hidden somewhere on the island, just waiting to be discovered

**Blue** 40 diamonds sit in stoneware talismans. And the great Wight Eye itself, the most fabulous diamond of them all

**Yellow** Only **Commodore** one man knows where they are hidden, and he's not saying

**Pink** All that he has to say he's used already in the Spirit of the Stones

**Blue** It's a book and a computer game

**Yellow** And together they reveal the whereabouts of all those diamonds

**Pink** But - and here's the catch - in the form of riddles and clues

**Blue** Solve the puzzles in the program and you'll find it easier to solve the puzzles in the book

**Yellow** Solve the puzzles in the book and one for moral

**Blue** Commodore diamonds can be yours

**Pink** Forever! And ever

**Blue** You don't even have to go to the Isle of Wight. (Though should you want to, we've put a bargain holiday offer in every pack)

**Yellow** You simply work out where the diamonds are, and post off your claim

**Pink** Whoever discovers

into an unknown world of poltergeists, unholy spirits, banshees, manicores and demons

**Pink** The Spirit of the Stones is as entertaining as it can be rewarding. And, like all of our software, it has been specifically designed to get the best out of Commodore hardware

**Blue** You can't choose better

**Yellow** Commodore software it costs no more, even though there's more to it

**Pink** SPIRIT OF THE STONES BOOK OR CASSETTE WITH BOOK £14.95



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be the  
most  
natural  
subject

How  
Well  
known

## CAN FOR O

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USE THE COUPON BELOW  
NOW!**

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RH10 6JE.**

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Please send me ..... **Run-File** at £7.95

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# Compunet is up and running — but at what cost to the user?

*A first impression of Commodore's network system by John Cochrane — can you afford to join Compunet? Or can you afford not to?*



COMMODORE'S new Compunet system is now on line, and the first users are finding their way around the service. Owners of the 64 can, for \$190, get a Compunet modem and one year's subscription to allow them to make full use of the facilities. Added because designed to get the ball rolling have included free software and free mail service within Compunet, compunet.com, and free facilities to leave messages and programs in the public user area. By the time that you read this however some of these offers will have ended. The free software includes Viewdata for Frame1; Commodore claims that their Compunet modem can be used to give full access to Thread and Message, although you will have to pay additional subscription charges for these.

## Telephone

But what is Compunet and what does it do? Essentially it is a telephone-based communications system which allows a Commodore 64 to be used to talk to a central mainframe computer, and access most of the facilities of that computer. These facilities presently consist of a store of software, both commercial and DTP, either free or on credit, information on a range of topics available as streams of text, blank screens on which you can leave messages for others, and private messaging. The system is a commercial one, that is, it is set up to make money and many of the services must be paid for. You are allocated a £20 credit limit when you register as a user, but the service could cost you many times that amount if you are not careful. Commodore has however tried to cater for many users and budgets by setting up a number of alternative services with different charge rates. Commercial

software can be bought and immediately transferred to your own machine, although you may need to have the Compunet modem attached to your machine in order to run the software once you have bought it. A service called The Jangle is a relatively free-cost service which can, to a limited degree, provide a bulletin board with messages and answers on any topic. There are educational services, and so on.

## *"The structure of Compunet is based on pages of text..."*

The hardware for the 64 (hardware for other users to follow) consists of a black box which plugs onto the cartridge port and has a five cable ending in a series 600 telephone plug, so you must have one of the new style phone sockets to use the modem. If you want to use the modem for talking to another 64 then you will need a double socket or a special connector so that you can use your ordinary phone at the same time. Inside the modem are two copper boards, one to control the phone signals and to provide the main dial hardware, and the other holds the built-in ROM and hardware to communicate with the 64. In principle, it should be possible to use the modem as a general purpose device, to talk to existing phone-in services. Additional software is required for this and you will be notified in CIOB local version.

The structure of Compunet is based on the idea of pages of text (called frames), much the same as those provided by Teletext. The frames are numbered and are used as addresses to further information

or to the other Compunet facilities. For example, Frame 1 gives you the main menu. It tells you that Frame 100 will tell you more about Compunet, 101 is for news and software, 102 is the shopping centre, 400 is money matters, and so on. If you select Frame 100 then you are shown a further directory, Frame 110 for information on how to register as Compunet, 120 is a user guide, 140 information on the Compunet Courier (server handling messages) — you get the idea. Each directory gives you more information on a given topic and you reach a specialized frame which offers the final product. The final product may be a document or several frames, which is transferred to your machine and held in memory, you can look at each frame as you wish and save the whole document to tape or disk for looking at later. Most of the help and guide information is available in the menu. Some of these documents may be only available in a print, so order to receive them you must be properly registered and must agree the price before seeing what it is that you are purchasing.

## Commercial

There are several forms of software available. Commercial software from Commodore and other software houses can be bought at special rates and home-grown software can be bought and sold. Again, you don't know what you are getting until you have paid for it. Compunet is trying to ensure that the software sold gives value for money by threatening to expropriate anyone caught abusing the service, and by allowing users a chance to vote on the software which has just been bought. These votes are added and displayed for all to see — high votes should mean that the software

has proved popular, with previous buyers. You can only rent if you buy the software and you have only one rent per software item. The problem here is that, in practice, Computer does not tell you how many people in total have bought the software. Thus you can not know what proportion of buyers have been pleased with their purchase. Perhaps the system will be changed though. Computer is asking for suggestions for additional services and improvements to those existing.

Software is available under several headings, including educational and business software. Computer is keen to build up both these potential links and is attempting to set up additional services to support such things as business information services, estate agents facilities, and software for use in schools and beyond.

## MUD

Another form of software available on CompuLink, and this may become most people's main reason for getting the thing, is software which loads and runs immediately. There are two examples of how this works. When you first log in some software is automatically loaded onto your machine to make sure that you can make full use of all the basic facilities. Thus, there should be little chance of your hardware going out of date. The second example is a program called MUD (Multi-User Dungeon), developed at the University of Essex. This is a sophisticated adventure-type program which takes the whole thing a

stage further by allowing up to 32 people to access the thing at the same time. This only do you have the opportunity to climb around a wizard land, finding treasure, fighting monsters, finding treasure about the place, but you also stand a good chance of meeting another player.

All this happens while you are still connected through CompuLink.

Other services provided by Computer include public and private message sending, and classified advertising. The private message sending is achieved by letting you leave a message, in the form of your own letter-made format, with a named recipient. Only the person that you have named can read the message, just like sending a message through the post. Computer even aids the process of sending the recipient (you) by more than just if you want "sending an envelope". Public messages can be left in a number of ways. If you have some comment on a matter or a problem you can set up a message and leave it for all to see. If you come back to the system some time later perhaps someone else will have read your message and replied. A special method about messaging service lets you send personal adverts — you know the kind of thing, "kissable wanted in exchange for disk drive".

So, all in all, how does the service shape up and how much does it cost? Certainly there is a strong commercial side-line, which hopefully will become less noticeable as more users start to make their own contributions through facilities and so on. Computer has allowed for many types of

user, with many types of requirement. After the first couple of sessions most users will probably find the system which most interests them and stick to those. There are opportunities to request changes to, or additions to, facilities provided on the system should prove. One aspect which I personally do not like at all is the way that everything has been given a humorous name. The open area is called The Temple. There is a set of horizontal rooms at the bottom of the screen which allows you to select your choice, this is known as a Dashboard — it took me about four hours to work out what a Dashboard was. This particular type of commercial computer does not help in getting to understand the system.

## Complex

As regards costs, "complex" is the word which springs to mind. Most things cost something, software is simple in that the price is displayed before you buy. Connection charges vary with time of day, zero charge at night, £7.00 per hour during the day (plus £2.50 per hour any time if you want 2800/1200 connect). Charges for leaving messages or programs are typically 1p per minute per 1K program per day. Program or message rates cost 40 to 50 per cent of the asking price. So say and work that for one of you can — my only advice is to think before you connect yourself to any become a good system, but Commodore intends to make money out of it, and we all know the level of resources the company is used to. □

## FAST LOADERS



### R.B.S.

A NEW GENERATION conversion utility developed from the established Hypersave-64. R.B.S. converts virtually all your long loading cassette programs to TURBOLOAD faster than the C64's disk drive. Multigig and custom programs are handled effortlessly. Converted programs load independently. No additional hardware. No jokers, no SYS calls, no user knowledge required. Load "The Robot" in 120 seconds. Tomcat, Lightning Bolt. Feedback now obsolete. R.B.S. will convert more programs than any competing utility. Cassette £7.50p.

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# COMMODORE 64

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# Finding a new home for your machine code

*Useful routines for relocating machine code will ease the transition from Basic, M C Hert explains*

AFTER PROGRAMMERS have made the transition to machine-code, one question when planning a program is "Where shall I locate the code?" One favoured location is the custom buffer (location \$20 101F on the C-64 and VIC) whilst another on the C-64 is the area from location \$C000-\$CFFF (40130-5347) devoted, sometimes, though, you may need to have two machine code routines in memory at

the same time and if they were both written to occupy the same space then one of these will need to be relocated.

If the program contains mainly of relative branches such as BEQ +11 or of absolute jumps, then no problems will occur. Other types of code do not relocate so easily, however. If you have custom user code which contains references to sub-routines within itself, then these sub-

routine calls will not transfer over without amendment as they refer to absolute addresses in RAM. In each case, it would be useful to have a system which computes the new routine locations before the data is POKE'd into position. This is called a RELOCATING LOADER and one is presented here which is suitable for any C64 machine.

The principle behind a relocating loader

## HEXIT listing

```

1 FOR J=828T0931 REDEF POKEX,X NEXT
2 END
10 DATA 32,115,0,201,36,200,42,32
11 DATA 82,3,72,32,82,3,170,104
12 DATA 32,205,109,76,116,164,32,97
13 REM VIC 32,205,221,76,116,196,32,97
14 REM B2 32,217,220,76,137,195,32,97
15 REM B4 32,131,207,76,255,179,32,97
16
17 DATA 3,10,10,10,10,133,95,32
18 DATA 97,3,101,35,96,32,115,0
19 DATA 201,30,41,15,144,2,105,0
20 DATA 96,32,130,173,32,247,103,170
21 REM VIC 96,32,130,205,32,247,215,170
22 REM B2 96,32,130,204,32,210,214,170
23 REM B4 96,32,132,109,32,45,201,170
24
25 DATA 152,72,72,130,72,72,169,36
26 DATA 32,210,255,104,32,144,3,104
27 DATA 32,149,3,104,32,144,3,104
28 DATA 32,149,3,96,24,105,105,106
29 DATA 105,41,15,24,105,40,201,50
30 DATA 144,2,105,6,32,210,255,96
31
32 REM FOR PETS (B2 & B4) MAKE 115 IN
33 REM LINES 10,10 INTO 112
34
```



is eventually quite simple. If we know that the location of a sub-routine is 20 bytes on from the start of the program, then the location of the sub-routine should remain 20 bytes on from the start of the program whenever it happens to be located. All that we have to do is to identify the relevant sub-routine calls, sub-routine entry code which contains the offset from the start of memory and then compute and POKE in the new low and high addresses of the sub-routine.

The routine **HEXIT** provides a fundamental calculation, so the device routine routine is actually useful. To use it, use fairly typical BASIC Listing 2—

If the first character is a 3 sign then the number will be converted to decimal. If there is no 3 sign then the number is assumed to be the decimal and will be converted to its hexadecimal equivalent. This is a feature, for the real purpose of the article is really to demonstrate how relocating loaders actually work. If you like, you can use a slightly different system — making the variable **DEC** (in **START+7** and the variable **HEX** (in **START+8**), use 0 as they say **RESPONSE**— or **YES/NO**— Note the absence of a comment in this case.

#### Relocate

If you study the functionality of **HEXIT**, then you will notice that the eight pairs of bytes that are substituted are sub-routine call routines contained within the body of the code. There are actually four sub-routines each of which is called twice. The first routine is **BASIC** and, coming from zero, this is located 20 bytes from the start of the program.

Similarly, sub-routine **SRM** is located 27 bytes from the start, sub-routine **SRM2** 34 bytes from the start and sub-routine **SRM3** 41 bytes from the start.

Once we have completed (manually!) the offset from the start of the program, then every time reference is made to a sub-routine that we desire to relocate we replace the low byte of the sub-routine call with the offset expressed as a **NEGATIVE** number. For example, if you study the **HEXIT + RELOCATE**, **BASIC** loader, then you will see that if the first sub-routine call comes right at the beginning of the second line. Therefore we replace the low byte of (decimal) 82 with -21 and repeat the same procedure whenever necessary throughout the program.

When the relocating loader **HEXIT + RELOCATE** is actually run, then the bytes of the sub-routine calls that we need to recompute are indicated by being negative numbers. Notice that the variable **S** holds the new start location of the code and any positive change is **POKED** straight into memory. If a negative number is indicated then line **S** is subtracted. The **ADDR** the offset into the new start location (**S** minus a negative number) equals **S** plus that number. **V** is the low byte of the new sub-routine call and then a **POKE** is in place computation. The high byte is computed and the data pointer moved on

## HEXIT + Relocate listing

```

1 S=49152:H=104
2 FORJ=3 TO8:H=1:READ X:IF 30=8THEN 4
3 H=S-X:V=X-INT(X/256)*256:POKE J,V:H=X/256
  J=J+1:READ Z
4 POKE J,X:HEXIT
10 DATA 32,115,8,281,38,288,42,32
11 DATA -22,3,72,32,-22,3,179,184
12 DATA 32,285,189,76,116,164,32,-37
13 DATA 3,18,18,18,18,133,35,32
14 DATA -37,3,181,38,36,32,115,8
15 DATA 281,59,41,19,144,2,185,8
16 DATA 95,32,138,173,32,247,183,179
17 DATA 152,72,72,190,72,72,169,95
18 DATA 32,218,255,184,32,-84,3,184
19 DATA 32,-89,3,184,32,-84,3,184
20 DATA 32,-89,3,95,24,186,185,185
21 DATA 186,41,15,24,185,48,281,58
22 DATA 144,2,185,8,32,218,255,95

```

Start on page 88 for the **HEXIT** functionality

by a **READ Z** and the loop variable incremented by a **J=J+1**. The high byte is then **POKE**d in by the normal operation of line 4. Notice that although only one value is entered into the code, (i.e. the negative value of the offset) two new values are generated from this, the low and high bytes of the computed sub-routine location.

Obviously, in the approach one has to have a variable holding the value of the start (**S** in this case) and it is probably convenient to have a value specifying the total number of bytes in the program (**N**). In order to relocate the code, all that is needed is to put the desired location for the start of the code into the variable **S** in line 1.

A relocating loader like the one just described makes one's life times much more variable. Just remember that one has to start counting the bytes from 0 at the start of the program, and all of your programs should relocate without difficulty.

The **HEXIT** loader is set up, by default, for a Commodore 64. As there are calls for **SRM**, the routine will need adapting for other machines. This is quite easy to do. In place of line 12 (tagged by the double colon) put the relevant line for the **VIC**, **PET BASIC 2** or **PET BASIC 4** the likewise for line 22.

In addition, **PET** owners (82 and 84) should ensure that the value of 115 in line 10,18 reads 112. ■

## HEXIT disassembly

0000	00 70 00	JSR	00070	
0001	00 04	CMF	00004	
0041	00 00	ONE	00000	
0040	00 00 00	JSR	00000	: Replace with low/high
0040	40	PIR		bytes of (START + 00)
0047	00 00 00	JSR	00000	: Replace with low/high
0040	00	TRM		bytes of (START + 00)
0040	00	PLA		
004C	00 00 00	JSR	00000	
004F	4C 74 04	JMP	00474	
0000	00 01 00	JSR	00001	: Replace with low/high
0000	00	ROL		bytes of (START + 00)
0000	00	ROL		
0007	00	ROL		
0000	00	ROL		
0000	00 00	STA	000	
0000	00 01 00	JSR	00001	: Replace with low/high
0000	00 00	ADC	000	bytes of (START + 00)
0000	00	RTS		
0000	00 70 00	JSR	00070	
0004	00 00	CMF	00004	
0000	00 00	AND	00000	
0000	00 00	ORC	00000	
0004	00 00	ORC	00004	
0000	00	RTS		
0000	00 00 00	JSR	00000	
0070	00 F7 07	JSR	007F7	
0070	00	TRM		
0074	00	TRM		
0070	40	PIR		
0070	40	PIR		
0077	00	TRM		
0070	40	PIR		
0070	40	PIR		
0070	00 04	LDA	00004	
007C	00 00 FF	JSR	00700	
007F	00	PLA		
0000	00 00 00	JSR	00000	: Replace with low/high
0000	00	PLA		bytes of (START + 00)
0004	00 00 00	JSR	00000	: Replace with low/high
0007	00	PLA		bytes of (START + 00)
0000	00 00 00	JSR	00000	: Replace with low/high
0000	00	PLA		bytes of (START + 00)
000C	00 00 00	JSR	00000	: Replace with low/high
000F	00	RTS		bytes of (START + 00)
0000	10	CLC		
0001	00	ROX		
0000	00	ROX		
0000	00	ROX		
0004	00	ROX		
0000	00 0F	AND	0000F	
0007	10	CLC		
0000	00 00	ADC	00000	
0004	00 00	CMF	00004	
000C	00 00	ORC	00000	
000C	00 00	ORC	00000	
0040	00 00 FF	JSR	00400	
0040	00	RTS		

# COMMODORE SOFTWARE FILE

## Disassembler

Mark Thomson, Apple (Boulder) and the program for the 64 or 65.

THIS IS A simple disassembler for the Vtc or 64. It will disassemble any version of memory and has a standard 6502 instruction from The workshop. Top of the program, has 140 or 150, has been kept as short as possible, so there is no over handling.

The start address specified for disassembling must always contain a valid

memory op-code, since an address on an operand, or you will get "out of data over a 150". The listing can be sent to screen or printer.

On running, you will be prompted for a filename. This is optional. Second, select the desired output device number. Third, type H or D for hex or decimal mode. Finally, enter start and end addresses of the routine to be disassembled (8-to hex or decimal according to mode).

The program works by first parsing the address in "A" then searching the data space for the op-code of the same value. The memory location address in "A", then

converted into hex if necessary, and displayed, along with the memory read into the data space via M5. The third value read from the data space is N, which denotes addressing mode. The value passes into the appropriate subroutines which calculate the operand and address and returns it as OPS which is then stored.

The address given then has N added to it to point the next op-code.

Use the disassembler to study the ROMs subroutines in your Machine - for example for keywords such as LDRM. The Programmer Reference Guide contains a comprehensive memory map.

```

1  REM*****
2  REM*****
3  REM*****DISASSEMBLER*****
4  REM*****BT*****
5  REM*****MARK THOMSON*****
6  REM*****
7  REM*****
8  INPUT"(CLS) (SYS)FILENAME[OFF]";FS
9  INPUT"(DOWN) (SYS)OUTPUT_DEVICE NO.[OFF]";D
10 F$=F$+CHR$(13)+CHR$(10)+CHR$(10)
11 OPEN$D,O,F$
12 INPUT"(DOWN) (SYS)SELECT HEX OR DECIMAL(H OR D)[OFF]";RS
13 IF RS<>"H"AND RS<>"D" THEN GOTO
14 IF RS="H" THEN MODE=0
15 IF RS="D" THEN MODE=1
16 INPUT"(DOWN) (SYS)START ADDRESS[OFF]";SAS
17 INPUT"(DOWN) (SYS)END ADDRESS[OFF]";EAS
18 ON MODE+1 GOSUB 20070,20080
19 IF SAS>EATRENPRINT"(DOWN)ADDRESS_ERROR";FOR DS=STO2000:NEXT:GOTO20
20 PRINT"(CLS)";A=SAS
21 P=PTR(A)
22 READC,N$,N1:IF C<>P THEN GOTO
23 RESTORE:ON MODE+1 GOSUB 20020,20030:REM HEX,DEC ADDRESS DECODE
24 PRINT$A$,N$;" ";IF MODE=0 AND N<>5 THEN PRINT$A$,N$;" ";REM $ SHOWS
25 N$.
26 ON GOSUB 20040,20050,20060:REM CALCULATE OPERAND
27 PRINT$A$,OPS
28 A=A+N:REM BUMP ADDRESS COUNTER TO NEXT MEMORIC
29 IF A>EATRENPRINT$;CLOSE$;END
30 GOTO140
31 REM HEX-DEC S/R PASS HD$,GET ND
32 ND=16*(ASC(ND$)-48+(ASC(ND$)>64)*7)+ND$-RIGHT$(ND$,1)
33 ND=ND+ASC(ND$)-48+(ASC(ND$)>64)*7
34 RETURN
35 REM DEC-HEX S/R PASS DH$,GET DS
36 DS=CHR$(INT(DH/16)+((INT(DH/16)>9)*7+48)+DH-DH-INT(DH/16)*16
37 DS=DS+CHR$(DH-INT(DH/16)*7+48)
38 RETURN

```

```

20020 REM ADDRESS DECODE (HCB) S/R
20021 DB=INT(A/256):GOSUB20022:REM CONVERT HIGH BYTE
20022 AS=HCB-DB-A-INT(A/256)*256:GOSUB20023:REM CONVERT LOW BYTE
20023 AS=AS+DBS:RETURN
20024 REM ADDRESS DECODE (DC) S/R
20025 AS=DCGETS(STR$(A),LEN(STR$(A))-1):RETURN
20026 REM IMPLIED ADDRESSING (NO OPERAND) S/R
20027 CP=0:RETURN
20028 REM 1-BYTE OPERAND S/R
20029 IFDB=STR$(CP-SIGTS(A+1),LEN(STR$(CP+(A+1))-1):RETURN
20030 DB=PEEK(A+1):GOSUB20031:CP=DB:RETURN
20031 REM 2-BYTE OPERAND S/R
20032 IFDB=STR$(PEEK(A+2)*256+PEEK(A+3)+CP-SIGTS(STR$(LEN(STR$(PEEK(A+2))+1):RETURN
20033 DB=PEEK(A+2):GOSUB20034:CP=DB:RETURN
20034 REM CALCULATE PROGRAM START AND END ADDRESSES (HCB) S/R
20035 HS=LEFT$(HCB,3):GOSUB20036:SA=HS*256
20036 HS=RIGHT$(HCB,3):GOSUB20036:EA=HS*256
20037 HS=LEFT$(HCB,3):GOSUB20038:EA=HS*256
20038 HS=RIGHT$(HCB,3):GOSUB20038:EA=HS*256
20039 REM CALCULATE PROGRAM START AND END ADDRESSES (HCB) S/R
20040 SA=VAL(HS):EA=VAL(EA):RETURN
20041 DATA 0,RR,1,1,ORA(1),2,3,ORA,2,4,AND,3,5,PRP,1,6,ORA,3,10,AND,1
20042 DATA 13,ORA,3,14,AND,1,14,RR,3,17,ORA(1),2,21,ORA,3,23,AND,X,2
20043 DATA 24,CLC,1,25,ORA,1,26,ORA,3,30,AND,1,31,OR,1,33,AND(1),2
20044 DATA 34,BIT,3,37,AND,2,38,AND,2,42,RR,1,41,AND,3,42,AND,1,44,BIT,3
20045 DATA 45,AND,1,46,AND,1,48,AND,3,49,AND(1),2,51,AND(1),2,54,AND,X,2
20046 DATA 54,AND,1,57,AND,1,58,CLT,1,61,AND,X,1,62,AND,1,64,BIT,3
20047 DATA 65,AND(1),2,69,AND,3,70,AND,3,73,RR,1,75,AND,3,76,AND,1
20048 DATA 78,RR,1,79,AND,3,79,AND,3,81,AND,3,81,AND(1),2,83,AND,3,84,AND,1
20049 DATA 84,AND,3,88,CLT,1,89,AND,1,90,AND,3,94,AND,3,96,AND,3
20050 DATA 97,AND(1),2,101,AND,3,103,AND,3,104,AND,1,105,AND,3,106,AND,1
20051 DATA 108,AND(1),3,109,AND,3,110,AND,3,112,AND,3,113,AND(1),2
20052 DATA 117,AND,3,118,AND,X,2,120,AND,3,121,AND,3,123,AND,3,124,AND,3
20053 DATA 126,AND(1),2,133,AND,3,134,AND,3,136,AND,3,136,AND,1,138,AND,3
20054 DATA 140,AND,3,141,AND,3,142,AND,3,144,AND,3,145,AND(1),2,148,AND,3,150,AND,3
20055 DATA 160,AND,3,161,AND(1),2,162,AND,3,164,AND,3,165,AND,3,166,AND,3
20056 DATA 168,AND,3,169,AND,3,170,AND,3,170,AND,3,173,AND,3,173,AND,3
20057 DATA 174,AND,3,174,AND,3,177,AND(1),2,178,AND,3,178,AND,3,178,AND,3
20058 DATA 182,AND,3,183,AND,3,184,AND,3,184,AND,3,184,AND,3,184,AND,3
20059 DATA 190,AND,3,191,AND,3,192,AND,3,193,AND,3,194,AND,3,194,AND,3
20060 DATA 198,AND,3,199,AND,3,200,AND,3,201,AND,3,202,AND,3,203,AND,3
20061 DATA 208,AND,3,209,AND,3,210,AND,3,211,AND,3,212,AND,3,213,AND,3
20062 DATA 216,AND,3,217,AND,3,218,AND,3,219,AND,3,220,AND,3,221,AND,3
20063 DATA 224,AND,3,225,AND,3,226,AND,3,227,AND,3,228,AND,3,229,AND,3
20064 DATA 236,AND,3,237,AND,3,238,AND,3,240,AND,3,241,AND(1),2,243,AND,3,244,AND,3
20065 DATA 246,AND,3,247,AND,3,248,AND,3,249,AND,3,250,AND,3,251,AND,3

```

## Sprightly

Steve Brown, from Langley, B.C. presents the 44 program

THIS IS A space demonstrating program, using addressing and binary command.

You'll see a little more on the screen who will with several under the control of a program. Line 20-28 check the edge of the screen for the space and sets the correct registers and positions. 29-343 handles characters and space selection. 345-355 checks the program. 356-363 sets the X and Y values to position the cursor. Line 365

clears the screen and 366 sets up arrays and variables for sprite images. Lines 370-380 set up the sprite registers, 380 gives a command. 380-390 read sprite image data into memory. 390 reads in image data and puts values in arrays. 390 positions the cursor. 400-410 contains sprite image data, and 410-420 gives the image order.

1 REM WRITTEN BY STEVE BROWN  
10 GOTO250

20 IFY=0THENY=255:RETURN:REM CHECK TOP SCREEN

30 IFY=255THENY=0:RETURN:REM CHECK BOTTOM SCREEN

40 IFX=0ANDPEEK(V+16)=0THENPOKEY+16,0:300:REM CHECK RIGHT

50 IFX=0ANDPEEK(V+16)=0THENPOKEY+16,1:300:REM CHECK LEFT



notes all at the same time!

■ At the press of a button, you can summon up pre-programmed rhythms and bass accompaniments to play along to

■ These three rhythm combinations can be speeded up or slowed down

■ You can wish glissando too long as you don't hurt yourself!

■ That is, make a note slide up in pitch

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■ And, for better sound reproduction you can connect

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■ Simply type in the notes from the SFX Tutor Handbook

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■ (This is the smart way of saying you can play three different

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```

688 DATA 126.0,0.102,0.0,66.0,0.0,0.126,0.0,0.24,0.0,126.0
689 DATA 126.0,0.126,0.0,0.126,0.0,0.0,0.60,0.0,0.36,0
690 DATA 4.0,0.4.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0
691 REM IMAGE 1
700 DATA 126.0,0.1,254.0,0.0,94.0,0.0,134.0,0.0,102.0,0.0,24.0,0.0,60.0
701 DATA 124.0,0.0,190.0,0.1,61.0,0.2,60.120,0.0,0.0,0.102,0.0,195.0
710 DATA 129.120,7.3,120.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0
711 REM IMAGE 2
720 DATA 126.0,0.1,254.0,0.0,94.0,0.0,134.0,0.0,102.0,0.0,24.0,0.0,60.0
721 DATA 60.0,0.0,124.0,0.0,190.0,0.1,61.0,0.6,60.0,0.102,0.0,195.0
730 DATA 195.0,0.1,199.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0
731 REM IMAGE 3
740 DATA 126.0,0.1,254.0,0.0,94.0,0.0,134.0,0.0,102.0,0.0,24.0,0.0,60.0
741 DATA 60.0,0.0,60.0,0.0,124.0,0.0,190.0,0.0,60.0,0.24,0.0,0.0,0.0
750 DATA 60.0,0.0,124.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0
751 REM IMAGE 4
760 DATA 126.0,0.1,254.0,0.0,94.0,0.0,134.0,0.0,102.0,0.0,24.0,0.0,60.0
761 DATA 60.0,0.0,60.0,0.0,60.0,0.0,60.0,0.0,60.0,0.24,0.0,0.0,0.0
770 DATA 24.0,0.0,56.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0
771 REM RIGHT IMAGE 1
880 DATA 126.0,0.1,127.120,0.0,122.0,0.0,97.0,0.0,102.0,0.0,24.0,0.0,60.0
881 DATA 62.0,0.0,125.0,0.0,188.120,0.1,60.64.0,60.0,0.102.0,0.195.0
890 DATA 129.120,1.192,324.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0
891 REM IMAGE 2
900 DATA 126.0,0.0,127.120,0.0,122.0,0.0,97.0,0.0,102.0,0.0,24.0,0.0,60.0
901 DATA 60.0,0.0,62.0,0.0,125.0,0.0,188.120,0.0,60.0,0.102.0,0.39.0
910 DATA 195.0,0.0,227.120,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0
911 REM IMAGE 3
920 DATA 126.0,0.0,127.120,0.0,122.0,0.0,97.0,0.0,102.0,0.0,24.0,0.0,60.0
921 DATA 60.0,0.0,60.0,0.0,62.0,0.0,125.0,0.0,60.0,0.24,0.0,0.0,0.0
930 DATA 60.0,0.0,62.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0
931 REM IMAGE 4
940 DATA 126.0,0.0,127.120,0.0,122.0,0.0,97.0,0.0,102.0,0.0,24.0,0.0,60.0
941 DATA 60.0,0.0,60.0,0.0,60.0,0.0,60.0,0.0,60.0,0.24,0.0,0.0,0.0
950 DATA 24.0,0.0,28.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0,0.0
951 REM IMAGE ORDEP
960 DATA 2.3,4,3,2,1,0,1,2,7,8,9,8,7,6,5,6,7,13,12,11,10,11,12,1,0
970 DATA 17,16,15,14,13,16,17

```

## Breakthrough

Full 3D game action from James Cameron

of James Cameron's

BREATHERS is a version of the old favorite Breakout for the unapologetic Win. In this version you get no level set, one hundred points, and a final

ball every time you break through the wall. The higher the balls, the more points you score. You start with seven lives, and if you lose the high score you lose a time and you can reset your score.

```

0 POKE36865,175 POKE36872,14 PRINT"*****BREAKTHROUGH*****"
1 PRINT"*****"
2 PRINT"*****"
3 FORI=150TO385STEP-1 POKE36865,I NEXT I
4 IFPEEK(137)=64THEN4
5 POKE649,0 POKE649,1
6 PRINT"INSTRUCTIONS(W/M)" INPUTR (R1)=R0,1,17="Y"THENGOSUB2000 G=0
7 PRINTCHR(0) V=0 L=7 J=36875 O=7000 J=23 P=40
8 POKE659,129 POKE649,1 PRINT"C", R0="*****" POKE36870,15
9 FORN=1TO5
10 PRINTCHR(R0,R,15)*8
11 M=1 M+1 Y=20 R=6152 C=K B=V
12 R=INT(R/4)*100+15
13 GOTO340
14 P=0+(J/4)*K POKEP+(J/4)*C,32
15 IFPEEK(P)=60THENG200
16 POKEP,63 C=K B=V

```

```

99 G=POKE(197):IFQ=64THENI43
100 Z=R-IFR=23THENR=R-1:IFR<12THENR=R+142
110 IFQ=38THENR=R+1:DFD=8122THENR=8143
140 POKE(2,2):POKE(2+1,32):POKEA,100:POKEA+1,100:GOTO145
143 PORT=170X:NEXT
145 DFOGTHENV=Y+1:GOTO144
147 Y=Y+1
150 [FR=1THENX=X-1:IFX=8THENR=R+3:GOTO70
160 DFR=3THENX=X+1:IFJ=21THENR=1
163 GOTO70
164 DFR=4THENX=X-1:IFV=8THENR=R-1:R=6
165 DFR=6THENX=X+1:IFX=21THENR=4
170 DFOUTHENQ=30
180 GOTO70
200 DFOGTHENI=200
201 GOTO350
202 IFX<38THENX=X+2:R=R+1:GOTO400
203 IFX<1THENR=R-5:GOTO400
204 IFPOKE(0)=568THENPOKE(1,35):PORT=170100:NEXT:R=INT(RND(1)*3+1)
205 IFPOKE(0)=568THENPOKE(1,0):GOTO140
230 POKE(1+1,135):PORT=170100:NEXT:R=INT(RND(1)*3+4):POKE(1+1,0)
235 POKEP,32
310 GOTO140
330 REM ## EXPLOSION
333 L=L+1:POKEP=255701355STEP-1:POKE(1+2,L):NEXT:POKE(1+2,0):POKEA,32:POKEA+1,32
335 IPL=38THENPOKEH(143)+40,32:GOTO50
336 PRINT"#####":PORT=1700:ADORA:PRINTR,FORP=170250:HEXTP:HEXTP
337 PRINT"#####HIT A KEY"
338 IFPOKE(137)+64THENQ=30
339 IFPOKE(197)+64THENQ=30
340 PRINT"YOU SCORED",V"POINTS":IFV<8THENPRINT"### A NEW HIGH SCORE ##"0000
345 RESTORE PRINT"HIGH SCORE"PRINTH,ING:INPUT"ANOTHER(0)=0# (PRIN#(0#),1,1)=
"Y"THENG
347 END
350 REM ## POINTS
353 DFR=8THENV=Y+50
360 DFR=1THENV=Y+25
370 DFR=2THENV=Y+20
380 DFR=3THENV=Y+15
390 DFR=4THENV=Y+10
400 DFR=5THENV=Y+5
410 GOTO200
1000 REM##BROKETHROUGH
1005 PORT=13570255:POKE(1+1,T):NEXT:PORT=255701255STEP-1:POKE(1+1,T):NEXT:V=Y+100:L=L+1
1010 PRINT"BROKETHROUGH!!! ONE EXTRA LIFE!!! 100 EXTRA POINTS!"XP
1020 GOTO
1020 IFPOKE(197)+64THENQ=30
1030 K=6-20:GOTO50
1040 REM##INSTRUCTIONS
2005 PRINT"## BREAK THROUGH"
2010 PRINT"WHEN THIS GAME YOU HAVE TO BREAK THROUGH A BRICK WALL."
2020 PRINT"POINTS ARE AWARDED AS FOLLOWS:"
2030 PRINT"### ##-30"PRINT"## ##-25"PRINT"## ##-20"PRINT"## ##-15"
2040 PRINT"## ##-10"PRINT"## ##-5"PRINT"##HIT A KEY"
2050 DETR DFR="":THENQ=30
2060 PRINT"YOU CONTROL A PADDLE AT THE BOTTOM OF THE SCREEN."
2070 PRINT"ITS CONTROLS ARE -- PRINT"←-LEFT,"PRINT"→-RIGHT."
2071 PRINT"YOU START WITH SEVEN LIVES.#####HIT A KEY"
2072 DETR DFR="":THENQ=30
2075 PRINT"DO BREAK THROUGH THE WALL YOU HAVE TO --"
2080 PRINT"##, KNOCK A HOLE RIGHT THROUGH IT."
2090 PRINT"2. HIT THE BALL IN THEOP."
2100 PRINT"THE BALL WILL REBOUND OFF THE WALL AND YOUR PADDLE AT RANDOM AN
GLE3."
2120 PRINT"IF YOU BREAK THROUGH YOU WILL GET AN EXTRA LIFE AND 100 POINTS."

```



```

4010 PRINT "A"
4020 R=INT (GET$( IPR=1, "THEP=F-1, 0=1
4030 IPR=1, "THEP=F+1, 0=-1
4040 IPR=1 "THEP=0=0
4050 GOT04050
4060 GOT04060
4070 P=F-22, PKEY2,200 PKEY2,240
4080 P=F-7500P+22+0.0, 0=PEEK(7500+P) PKEY7500+P,3, 0=0
4090 IF 0+THEH=0+10 PKEY2,170 FOR=870150 NEXT PKEY2,0, 0=32 GOT04020
4100 IF 0+0+0+7THEPKEY2,220 FOR=870100 NEXT PKEY2,0 GOT02000
4110 IF 0+0+0+0+0+0+8THEH=L-1 GOT05200
4120 IF 0+15THEH=L-1 GOT05200
4130 IF=8THEH,L=8" F=1 GOT04100
4140 L8="H" F=0
4150 GOT04100 GOT04020
4160 PKEY2500,240 PRINT "***** YOUR SCORE WAS",8C IFS0+HITHEH1=0C
4170 PRINT "HIGH SCORE IS ",H3 PRINT "***** PRESS 'V' WHEN READY"
4180 GET$( IPR=1 "THEH130
4190 GOT06110
4200 L=0 SC=0 I=0 PRINT "I" GOT02000
4210 E=0 F=0 S=0 F=0 PKEY2,0
4220 F=0-20, P=0-21, 3=0+21, F=0+20
4230 PKEY7500+P+0+0,200 PKEY7500+P+0+0,200
4240 PKEY7500+P+0+0,200 PKEY7500+P+0+0,200
4250 PKEY7500+P+0+0,4 PKEY7500+P+0+0,4 PKEY7500+P+0+0,4 PKEY7500+P+0+0,4
4260 PKEY7500+P+0+0,200 C=C+1 IFS0+THEH4200
4270 PKEY7500+P+0+0+20,30 PKEY7500+P+0+0+21,30
4280 PKEY7500+P+0+0+21,30 PKEY7500+P+0+0+20,30
4290 GOT06200
4300 PKEY2,0 FOR=87000STEP-1 FOR=3407000STEP-2 PKEY4,0 PKEY4,0 NEXTS,0
4310 U=22, V=22 PRINT "A", HRS, JUC, " ", FOR=870400 NEXT GOT050
4320 PKEY2,0 PKEY2,127 I1=0 PKEY2,100+H120=0 PKEY2,250 P=PEEK(PA)
4330 I3=INT (PEEK(100) /80)
4340 P=0, 0=0, 0=0, 0=0
4350 IF,1,0+THEP=P+0, 0=1
4360 IF,1,0+THEP=P+1, 0=-1
4370 IF,1,0+THEP=P-2,THEH
4380 IF,1,0+THEP=P-2,THEH+1,22,0=22 PRINT "R", RE0ET10, " ", 0C+0C-10
4390 SC,0=0

```

## Maths Test





[illegible]

## Notinput

is order a name from the screen without affecting the surrounding data or numbers.

An array, `MPs`, is dimensioned to store each character. Line 118 prints a screen message and binds the cursor to a prompt. Control then passes to the main sub-routine at 10000.

An essential story will almost always start. When incorporating the ratings in your own programs, change the subscripts of P(1) and the alternate values to 100, 130 and 1800 to match the input length. You might also like 10000 to accept, say, only numbers, in any other type of input where your program can benefit.

NOTHING! It is a protected circuit, and

```

10 REM *****
20 REM *
30 REM * NOTINPUT *
40 REM *
50 REM *****
60 DIM A$(22), DV=0
70 FOR I=0 TO 21, N$(I)=0: NEXT I
80 PRINT "ENTER NAME ", POKER204.0 ODSUB10000
90 IF A$=33 OR DV=1 THEN FOR I=0 TO 21 N$(I)=N$(I)+CHR$(N$(I)+1): NEXT I: GOT0140
100 PRINT "END OF C"$(I+1) " GOT0100
110 PRINT "END OF N$(I)
120 STOP
13000 FOR I=0 TO 21
13010 SETA$ IF A$="" THEN 13080
13020 A=ASC(A$)
13030 IF POKER204.0<32 OR A>96 THEN 13060
13040 A$(I)=A
13050 WAIT207.1.1 PRINTA$: NEXT I: DV=1
13060 POKER190.0 WAIT207.1.1 POKER204.1
13070 RETURN

```

**Based on your CamScanner program, collecting a document — and especially on plain white paper! If possible:**

Hiding must be accompanied by a representative reduction in size listing the programs and applications how it is constructed. We pay \$4-80 for each long-term listing published. We cannot guarantee too late every program submitted, so please keep a copy. If you want us to return your file log page must include a stamped, addressed envelope. If you have any problems with the program, please write to the appropriate author. Software File,

Communications Hardware, IS 1610 In the Science Museum, London WC9N 7LN



# Win a RAT!

THE JOSTLING is dead — long live the RAT! Charish's revolutionary infra and control computers conventional parasites in the machine. Compatible with all personal-domain software, the RAT — Remote Action Transceiver — comes in two parts, the hardware, (remotely coded and powered by a PPS battery, and the software unit which plugs into the RAT's Port 1).

The RAT is touch controllable, with a pressure sensitive pad replacing the conventional joystick handle. The fire button is also replaced with a pressure pad, and there are no moving parts. It's totally responsible for the RAT to wear out.

The RAT's infra red signals are transmitted from the "nose" and picked up by the receiver unit, and causes interaction with any other remote-control device such as TVs and video.

The RAT costs £29.95, but we have eight to give away in the single competition. Also bonus the winners will receive a copy of Charish's new arcade game The Perils of Bow George, in which the valiant hero must collect enough food to survive through the wastelands, then avoid aliens, cyborgs and spiders in his task to the laboratory cave. Bow George costs £4.95 in the shops.

## How many spots?

All you have to do to win is to look at the character shown below, and tell us how many times you can spot the word **CHORTAN** hidden in it. You can trail forwards, backwards or diagonally in a straight line. When you've counted up, put the answers on a POSTCARD with your name and address, and complete the envelope in an original and original manner in 15 words or less. Charish's RAT sends spots off the competition because.

Competition closes on January 11th. Results will be announced in our March issue. Normal competition rules apply. Post your entries to RAT Competition, Commodore Horizons, 10/10 Little Newport Street, London WC2.

The winners of Charish's Grand Graphics competition are: J D Golder of Bedford, C R Turner of Old Woking, S Adams of York, C Emy of Haywards Heath, G Thomas of Bicknhead, A C Burney of Manchester, M D Chaffee of Stoke-on-Trent, M Baskett of Chesham, M Rammelaar of Paris, W Sackler of Oxford. Each will receive copies of Wizard, Mighty Mike and Pacey the Pacey Piggy from Grand Graphics.



Autogames	080
B	
Beyond	8
BGP	60
Bat II	88
Battle Run	84
C	
CBS	8 12 13
Creative Sparks	34
Chessmate	70, 71
Chessie	81
Chessmate	48 51 88
Computer	48 47
Computers	78
D	
Digital Imagination	84C
Dr Tech	72
Drift	82
E	
Edutalk	33
F	
Fantasy	4
Flight II	30-31
G	
Golf	83
H	
Home Generation	28 27
Howlers	84
I	
Islands	79
J	
Software Supermarket	49
Junior Software	80C
Justwin	38
Joe Ford Software	82 83
Joe Ford Supplies	82 47
K	
Kart	10
Kenney	20

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## Clowning around

**Book, 4th Plan Projects for  
Children, Children and Adult  
Publishers, Prentice Hall  
Price: \$8.95**

[illegible]

As the book is littered with drawings of a clown (the author, perhaps?), I can only assume that it is intended for an extremely young audience. It is an American book that should have stayed on the other side of the pond. When I went to ITN, a just might have appeared to similarity, somewhere, but in ITN it is an overused, outdated

Instant  
sunshine

Book: *James Arnold Case*  
for the Commission of  
Author: *John Frost*  
Publisher: *Post/PCNY*  
Revised: 11/08

**Reviewer: Phil Bower**  
The title might lead you to expect a book of program listings which, strictly speaking, this is not: it is intended for people who are interested in writing their own games programs in Basic, and not out to teach the experienced programmer how this may be done. The aim is to produce what a "Goodie" would be

Abstract: Types of service games are  
in some relationship

The middle section begins by presenting a "student" interview and then gives a chance for questions for putting things on the line better. There include a variety of open designs for both positive and negative, and a fairly large (more) range of simple model effects. The paragraphs thus presented are well illustrated, though inevitably they trail off as variations on the same theme. Nevertheless there are well motivated and would be sure to engage further discussion.

The adventure sections are slightly different, so that the language prevailed product part new game, although suggestions are made as to how it might be used.

John Ford's book is unusual and interesting, and should provide both enjoyment and inspiration. I mean the subject simply but thoroughly, and in good value for money at £5.99.

Publisher: Prentice Hall  
 ISBN: 0-13-061815-1  
 Price: \$79.95  
 Hardcover: Jack Cullen

This guide to the DSM is the best reference book I have read since Hans Wiersma's *Programming the ACT/COMP*.

Other chapters include Direct Access Programming, which replaces the use of Block and memory addresses with constants in a clear and understandable manner.

ESL protection is covered fairly fully although some advanced protection methods are not mentioned.

Comma-ber's data encoding scheme is clearly explained, and section headers are assigned as part of the explanation. DOD error codes and messages are documented and explained in



**The 1541  
finally  
explained**

**Special Double Commission**  
2000  
Authors: Richard Janssen and  
Donald D. Allen

100

The third important program listed will allow you to receive the FBI's mail/news board anywhere you want. All read the new board passing over the board.

The screen display shows where the hand is, what tools and objects are used, and directions are used so that you

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impaired reading especially if you have not had information on a dedicated Program being any way to understand, and control characters have been quarantined in readable form. There are programs to add a dash and to make errors.

I have typed in several programs and have not found any that would not work. I recommend this book unreservedly to all who desire a thorough understanding of the 1981 disk drive.

# Bed time

**Book: *Automating, Charting and Counting for the War 20***  
**Author: Tony Fisher**  
**Publisher: Penarth Press**  
**ISBN: 754**

**Reviewer David Shipman:**  
This American book is well bound and laid out, but it has come at the wrong time, as the market would have been doing shortly after the Y2K was launched.

The book can really be used to supplement the manual provided with the machine. The program's strengths aren't so much its short and simple, but that they were fully and comprehensively explained, even to the extent of telling which keys to use to enter them — perhaps not comprehensively in place, as the explanations are longer than the programs they explain. Also, many of the programs are almost identical to some in another chapter, or even the same chapter. For instance, in Chapter Ten, 8 of the 12 programs are the same except that all eight use PRINT with changes. (From a Christmas Card to a New Year Card to a Halloween Card and so on.) As for colors, no one is much used the 12th chapter, and the only PEEKs used are for sound, and those from the 15th chapter.

The usual Appendix is included, covering Chapters and course/teacher ratings, but the most glaring omission is of UNCT's. Not even a single mention.

In conclusion, a fairly fast, slightly stimulating book which may well appeal to you if you find the Reference Guide a bit dry. What value can be used about a book including a program title like "Clear Eyes, Clear Mind, Clear Voice, L-5077?"

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Programmer's Ref. Guide (Commodore)	8.95
LOGO (Commodore)	24.95
CP/M (Commodore) v.1	48.95
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Personal Invoice & Statements (Atari)	20.00
Checkbook & V.A.T. accounts (Atari)	15.95/4.95
Real Accounts (Atari)	15.95/4.95
Calculation (Atari)	10.95
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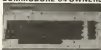
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Data on  
serotypes

1. [Introduction](#)  
 2. [Getting started](#)  
 3. [Getting started](#)  
 4. [Getting started](#)  
 5. [Getting started](#)

If you use 0 or 1 as the unit, then you cannot place any further definitions in the EPOCH header of the character set, and this will restrict the number of open definitions to 128. If more are needed, up to 160 maximum, then 000 or 10000 is used. If using Basic, you will either have to insert the line on value the bottom of Basic to protect your string data. If you store the string, then the right option pointers will also move, and if you don't use the default character set then one must be provided. The answer to your question, then, is to FORCE the split pointer byte with the location in memory of the data to be used. This can be done within a program, but because 10000 for space is location 1000, if the data stored at 10000 is 100, then the location of the space data is at 100\*1000 = 100000. I advise both 0.

By P-Model 3000 with 100,000 lines, data can be increased at 100% to 5000. So your program will P-Model in the new location as required, and there you can see many sets of digital codes.

## Practical advice

I RECENTLY bought a spreadsheet program. Partridge did think version 4.

**Address:** \_\_\_\_\_  
**City:** \_\_\_\_\_  
**State:** \_\_\_\_\_  
**Zip:** \_\_\_\_\_

**IF PRACTICING** cannot help, I suggest you try **Bliss**. Trading Co. of Garden House, 33 High Street, Freetown, Sierra Leone. Write for the TR-1 system.

## Out of memory

I HAVE WRITTEN a program approximately 17K long, and tested it successfully. But after running the program for about five minutes I get OUT OF MEMORY errors on Windows95. Can you give any advice?

**Journal of  
Ecology**

IF YOU want to make the most of the original program, there's one matter, in the routine that it treats as though a large number of variables, arrays and arrays are being created when the program is run. Check the amount of memory consisting of the getting the OUT OF MEMORY error using the FRONTS method described in previous issues, and you will find a value, amount of memory available. Large arrays, strings and variables use up a great deal of memory, and the remedy is to cut the number of arrays, possibly reducing the number of arrays in your game. You may need to keep all the data throughout the game, or you can store the game's data data.

## Epson options

I AM THINKING of buying a printer which has to meet certain requirements. The print speed would have to be at least 600 cps, buffer storage, 40 megs, 80 cps and up to 100 cps paper, tractor and friction feed, capable of printing out in two drawings and able to be rolled backwards and forwards by a knob in the side. Can you give me some ideas, what size of order I could have to use

1. **Aluminum** 6061-T6  
 2. **Aluminum** 7075-T6  
 3. **Aluminum** 2024-T3

**TYPE**  
I WOULD RECOMMEND  
the Ispoon FX-40 to home  
owners for your requirements.  
Optional interface with  
RS232-C and IEEE 488  
standard ports, and the  
standard is the Comstar 4000  
4 bit parallel interface. Print  
speed is 160 cps, with 24  
lines and 160 cps capability.  
For the greater documentation  
with the software you need to  
use before you buy on that you  
can be certain of compatibility  
with your equipment.

## Assembling the Vic

I HAVE READ a TON of books in the last few years and wonder if you can give me any advice on books touching assembly language, such as statistics and assembler included in this site is cool.

**Final Information**  
**Cash Number**

**TRN: Register Assembly Language Programming** for the PDP-10 by P. Holman in the *Ex-Volume* series from Honeywell, Standfast House, Bath Place, High Street, Barnet, London, 020-603 4130. Price is £10 including a cassette which contains an assembler program. The mathematics used are not standard, but should prove useful.

Many low assembly and disassembly programs can be obtained by joining KPLUG. For instance Vir Microcom, a mobile desktop program.

### Anagram of Gemini

I RUN A SMALL, medium order business as well as buying property. I have a lot with that drive and phone, and need a good semi-regularly increasing package with a good amount, which could work on a daily/weekly/monthly basis and give me some in addition to the past master for VAT and IEC. It would be necessary for the program to link with Finance and Northgate.

1. **Introduction**  
 2. **Methodology**  
 3. **Results**  
 4. **Conclusion**

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## Clearing writes

**MARY TIBBIS** I have been writing programs for my kid and found that it's easier to clear space from the screen. It was easier, how is this?

Address: \_\_\_\_\_  
City/State/Zip: \_\_\_\_\_

Look THE following is how  
upset "I" was and off

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**UNITED** In 1990, the company  
 reported a net loss of \$1.1 million.

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experienced:

## Cobol questions

I HAVE a Commodore 64 and in 1981 don't drive. Is it possible to get the language COBOL to run on it?

Could you also tell me at what order I should switch on my computer and dial down, the manual says the computer should be switched on last, while INPUT magazine says it should be switched on first.

**P. C. Brown**  
Bromley

YOU'll need the CP/M cartridge from Commodore to run COMOL, and it's not yet available. The manual is right, however, for:

If you need help with a technical query or problem-solving, then the

Jack Cohen,  
Commander, Phoenix,  
15-18 Little Newport  
Street London  
WC2E 8AF





**CLASSIFIED**

## CONVERSION OF DATA TO TABLE

remains a major value and dimension across these areas and can only, therefore, be a staffed task, notwithstanding total human factor multi-task operational global and network links required for fully being done with computers only in use.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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[illegible]

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principles. Also more countries with rapidly rising populations are joining the club.

Table 1. The frequency of the most common words in the corpus

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City High-Rise Museum of Urban  
Space Space Shuttle Aerial  
Challenge Exhibition Forest  
Museums Get Off My Garden  
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Mallards House garden 1000  
13 Saffron 44 lovely prop  
13 Pines Jarrow Newcastle  
612188 offer 1990

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[illegible]

494 [50] [51] *gamecube.com*. IBM's  
main software store is well worth  
the visit. (From Data on  
Disk) (2002) IBM's store  
page.

DEBBIE WEISS was named to replace her mother, Margaret Weiss, as president and CEO of the company in January 1994. She is a former executive at General Electric, where she worked for 10 years.

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**Figure 1**

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\*\*\*\*\*

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[illegible]

# Everyone's a winner with Beyond

*(Young artists at the "Warrior" gallery in the left, winning computers get Prizes for prizes, some without you. It will be a great game)*

**HELL NOOK** More Club has developed a computer-controlled train layout, consisting of track, four carriages, an engine, and a device for despatching carriages (they couple together on contact with another carriage or with the rear end of the engine). The engine is shown in the center of the diagram, directly over the despatching device. The system is being exhibited at the local Railway Show, and visitors are invited to program the train so that it picks up all four carriages and pulls them around the track in the order shown in diagram B. What is the SMALLEST number of times that the despatching device must be used to achieve this?

If you solve this problem you could win a solution BEYOND software package. TWENTY winners will receive copies of the Warrior for the 4th.

TWENTY runners up will receive copies of Proteus for the 6th, in which you control the Battle 3 megacomputer, coping with alien attacks, supply problems and subversives in a complex moon base. TWENTY ENTRANTS will receive free membership of the BEYOND CLUB, and a member for 41 will the BEYOND game of their choice with the next edition of the Beyond Club News letter (published April/May 83).

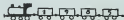
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Send your entry to Beyond Competitions, Commodore Horizons, 12/13 Lane Newgate Street, London WC1, in arrival by the last day of January. Results will be announced in our March issue. Normal competition rules apply.

The winners of the November Danger Mouse competition are: S. Bonyard of Stoke-on-Trent, R. Smith of Goshforth, S. Barnett of Chesterfield, R. Ross of Girdlebury, S. Piles of London, S. McCarthy of Newark, C. Bagg of Sussex, R. Cheng of Chorlton, T. Austin of Newcastle, R. Chelmer of Parkham, J. Mithelagen of Torquay, A. Lowe of Wigan, M. Tennant of Edinburgh, M. Hinchey of Arlebury, N. Murray, London, S. Baggott of London, S. Cresswell of Stirling, C. Whymore of Brentnall, C. Rivlin of London, and M. Jenkins of London. Each will receive copies of the Creative Sparks games Double Trouble and The Black Forest Challenge.



Diagram B



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# **KoalaPad** Touch Tablet

## JUST PICTURE IT!



**JUST PICTURE IT - BEING ABLE TO DRAW YOUR OWN HIGH RESOLUTION GRAPHIC DESIGNS ON YOUR COMPUTER SCREEN WITHOUT HAVING TO WRITE A PROGRAM!**

Plus, now you can... with the amazing Koala Pad from AudioGenix!

The Koala Pad lets you draw on your computer screen with a stylus. You can draw lines, circles, and rectangles. You can also draw freehand. You can also draw with a stylus. You can also draw with a stylus. You can also draw with a stylus.

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- Draw straight lines
- Draw straight lines
- Make circles
- Draw circles
- Plot points from a point
- Move objects around
- Draw shapes
- Draw other shapes
- Zoom in on screen
- Snap shapes between two points
- Save your pictures to disk or tape

The program is controlled entirely from the tablet by moving a cursor arrow around to the different drawing tools. An optional Programming Guide is also available to tell you how to use the Koala Pad pictures into your own programs.

Now you don't have to be an experienced programmer to produce real high resolution graphics on your computer. The Koala Pad from AudioGenix makes that easy as a pencil and paper. Just picture it.

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